State of Ohio Environmental Protection Agency

Street Address:
Lazarus Gov. Center
122 S. Front Street
Columbus, OH 43215

TELE: (614) 644-3020 **FAX:** (614) 644-2329

Mailing Address:
Lazarus Gov. Center
P.O. Box 1049
Columbus, OH 43216-1049

06/24/04

CERTIFIED MAIL

RE: Final Title V Chapter 3745-77 permit

01-25-04-0070
FRANKLIN INTERNATIONAL
Randy Parker
2020 Bruck Street
Columbus, OH 43207-2329

Dear Randy Parker:

Enclosed is the Title V permit that allows you to operate the facility in the manner indicated in the permit. Because this permit may contain several conditions and restrictions, we urge you to read it carefully.

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 Pollution Prevention at (614) 644-3469.

You are hereby notified that this action of the Director is final 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. It must be filed with the Environmental Review Appeals Commission within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency within three (3) days of filing with the Commission. It is also requested by the Director that a copy of the appeal be served upon the Environmental Enforcement Section of the Office of the Attorney General. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
309 South Fourth Street, Room 222
Columbus, Ohio 43215

If you have any questions, please contact Central District Office.

Sincerely,

Michael W. Ahern

Michael W. Ahern
Permit Issuance and Data Management Section
Division of Air Pollution Control

cc: Central District Office
File, DAPC PMU

State of Ohio Environmental Protection Agency

FINAL TITLE V PERMIT

Issue Date: **06/24/04**	Effective Date: **07/15/04**	Expiration Date: **07/15/09**

This document constitutes issuance of a Title V permit for Facility ID: 01-25-04-0070 to:
FRANKLIN INTERNATIONAL
2020 Bruck Street
Columbus, OH 43207-2329

Emissions Unit ID (Company ID)/Emissions Unit Activity Description

P002 (Nauta 1 Mixer)
Adhesives Mixing

P003 (Nauta 2 Mixer)
Adhesives Mixing

P004 (Ross # 2 Mixer)
Adhesives Mixing

P005 (Littleford # 1 Mixer)
Adhesives Mixing

P006 (Ross # 3 Mixer)
Adhesives Mixing

P007 (Littleford # 4 Mixer)
Adhesives Mixing

P020 (Nauta 3 Mixer)
Adhesives Mixing

P021 (Nauta 5 Mixer)
Adhesives Mixing

P022 (Mixer 1)
Adhesives Mixing

P023 (Mixer 2)
Adhesives Mixing

P024 (Mixer 3)
Adhesives Mixing

P026 (Mixer 5)
Adhesives Mixing

P027 (Mixer 11)
Adhesives Mixing

P028 (Mixer 12)
Adhesives Mixing

P029 (Myers 1)
Adhesives Mixing

P030 (Myers 2)
Adhesives Mixing

P031 (Ross # 1 Mixer)
Adhesives Mixing

P039 (Littleford # 2 Mixer)
Adhesives Mixing

P040 (Littleford # 3 Mixer)
Adhesives Mixing

P041 (Ross #4 Mixer)
Adhesives Mixing

P103 (Continuous Reactor System)
Continuous Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P003 Before Renaming)

P106 (Reactor 10 System)
Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P006 Before Renaming)

P107 (Reactor 9 System)
Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P007 Before Renaming)

P113 (Reactor 4 System)
Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P013 Before Renaming)

P114 (Reactor 5 System)
Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P014 Before Renaming)

P115 (Reactor 7 System)
Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P015 Before Renaming)

P116 (Reactor 8 System)
Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P016 Before Renaming)

P124 (Reactor 6 System)
Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P024 Before Renaming)

P125 (Reactor 11 System)
Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P125 Before Renaming)

P127 (Reactor 2 System)
Emulsion Polymerization Process Producing Adhesives

P128 (Pilot Reactor - Polymer Division)
Emulsion polymerization process producing adhesives equipped with a 58 gallon reactor primarily used for introducing new product lines.

You will be contacted approximately eighteen (18) months prior to the expiration date regarding the renewal of this permit. If you are not contacted, please contact the appropriate Ohio EPA District Office or local air agency listed below. This permit and the authorization to operate the air contaminant sources (emissions units) at this facility shall expire at midnight on the expiration date shown above. If a renewal permit is not issued prior to the expiration date, the permittee may continue to operate pursuant to OAC rule 3745-77-08(E) and in accordance with the terms of this permit beyond the expiration date, provided that a complete renewal application is submitted no earlier than eighteen (18) months and no later than one-hundred eighty (180) days prior to the expiration date.

Described below is the current Ohio EPA District Office or local air agency that is responsible for processing and administering your Title V permit:

Central District Office
3232 Alum Creek Drive
Columbus, OH 43207-3417
(614) 728-3778

OHIO ENVIRONMENTAL PROTECTION AGENCY

Christopher Jones
Director

PART I - GENERAL TERMS AND CONDITIONS

A. State and Federally Enforceable Section

1. Monitoring and Related Record Keeping and Reporting Requirements

a. Except as may otherwise be provided in the terms and conditions for a specific emissions unit, i.e., in Section A.III of Part III of this Title V permit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:

i. The date, place (as defined in the permit), and time of sampling or measurements.
ii. The date(s) analyses were performed.
iii. The company or entity that performed the analyses.
iv. The analytical techniques or methods used.
v. The results of such analyses.
vi. The operating conditions existing at the time of sampling or measurement.
(Authority for term: OAC rule 3745-77-07(A)(3)(b)(i))

b. Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.
(Authority for term: OAC rule 3745-77-07(A)(3)(b)(ii))

c. The permittee shall submit required reports in the following manner:

i. **All reporting required in accordance with OAC rule 3745-77-07(A)(3)(c) for deviations caused by malfunctions shall be submitted in the following manner:**

Any malfunction, as defined in OAC rule 3745-15-06(B)(1), shall be promptly reported to the Ohio EPA in accordance with OAC rule 3745-15-06. In addition, to fulfill the OAC rule 3745-77-07(A)(3)(c) deviation reporting requirements for malfunctions, written reports that identify each malfunction that occurred during each calendar quarter (including each malfunction reported only verbally in accordance with OAC rule 3745-15-06) shall be submitted by January 31, April 30, July 31, and October 31 of each year in accordance with General Term and Condition A.1.c.ii below; and each report shall cover the previous calendar quarter.

In accordance with OAC rule 3745-15-06, a malfunction constitutes a violation of an emission limitation (or control requirement) and, therefore, is a deviation of the federally enforceable permit requirements. Even though verbal notifications and written reports are required for malfunctions pursuant to OAC rule 3745-15-06, the written reports required pursuant to this term must be submitted quarterly to satisfy the prompt reporting provision of OAC rule 3745-77-07(A)(3)(c).

In identifying each deviation caused by a malfunction, the permittee shall specify the emission limitation(s) (or control requirement(s)) for which the deviation occurred, describe each deviation, and provide the magnitude and duration of each deviation. For a specific malfunction, if this information has been provided in a written report that was submitted in accordance with OAC rule 3745-15-06, the permittee may simply reference that written report to identify the deviation. Nevertheless, all malfunctions, including those reported only verbally in accordance with OAC rule 3745-15-06, must be reported in writing on a quarterly basis.

Any scheduled maintenance, as referenced in OAC rule 3745-15-06(A)(1), that results in a deviation from a federally enforceable emission limitation (or control requirement) shall be reported in the same manner as described above for malfunctions.
(Authority for term: OAC rule 3745-77-07(A)(3)(c))

ii. **Except as may otherwise be provided in the terms and conditions for a specific emissions unit, i.e., in Section A.IV of Part III of this Title V permit or, in some cases, in Part II of this Title V permit, all reporting required in accordance with OAC rule 3745-77-07(A)(3)(c) for deviations of the emission limitations, operational restrictions, and control device operating parameter limitations shall be submitted in the following manner:**

Written reports of (a) any deviations from federally enforceable emission limitations, operational restrictions, and control device operating parameter limitations, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures taken, shall be promptly made to the appropriate Ohio EPA District Office or local air agency. Except as provided below, the written reports shall be submitted by January 31, April 30, July 31, and October 31 of each year; and each report shall cover the previous calendar quarter.

In identifying each deviation, the permittee shall specify the emission limitation(s), operational restriction(s), and/or control device operating parameter limitation(s) for which the deviation occurred, describe each deviation, and provide the estimated magnitude and duration of each deviation.

These written reports shall satisfy the requirements (in part) of OAC rule 3745-77-07(A)(3)(c) pertaining to the submission of monitoring reports every six months and to the prompt reporting of all deviations. OAC rule 3745-77-07(A)(3)(c) is not fully satisfied until the permittee addresses all other deviations of the federally enforceable requirements specified in the permit.

If an emissions unit has a deviation reporting requirement for a specific emission limitation, operational restriction, or control device operating parameter limitation that is not on a quarterly basis (e.g., within 30 days following the end of the calendar month, or within 30 or 45 days after the exceedance occurs), that deviation reporting requirement overrides the reporting requirements specified in this General Term and Condition for that specific emission limitation, operational restriction, or control device parameter limitation. Following the provisions of that non-quarterly deviation reporting requirement will also satisfy the requirements (in part) of OAC rule 3745-77-07(A)(3)(c) pertaining to the submission of monitoring reports every six months and to the prompt reporting of all deviations, and additional quarterly deviation reports for that specific emission limitation, operational restriction, or control device parameter limitation are not required pursuant to this General Term and Condition.

See B.6 below if no deviations occurred during the quarter.
(Authority for term: OAC rule 3745-77-07(A)(3)(c))

iii. **All reporting required in accordance with the OAC rule 3745-77-07(A)(3)(c) for other deviations of the federally enforceable permit requirements which are not reported in accordance with General Term and Condition A.1.c.ii above shall be submitted in the following manner:**

Written reports that identify all other deviations of the federally enforceable requirements contained in this permit, including the monitoring, record keeping, and reporting requirements, which are not reported in accordance with General Term and Condition A.1.c.ii above shall be

submitted to the appropriate Ohio EPA District Office or local air agency by January 31 and July 31 of each year; and each report shall cover the previous six calendar months.

In identifying each deviation, the permittee shall specify the federally enforceable requirement for which the deviation occurred, describe each deviation, and provide the magnitude and duration of each deviation.

These semi-annual written reports shall satisfy the reporting requirements of OAC rule 3745-77-07(A)(3)(c) for any deviations from the federally enforceable requirements contained in this permit that are not reported in accordance with General Term and Condition A.1.c.ii above.

If no such deviations occurred during a six-month period, the permittee shall submit a semi-annual report which states that no such deviations occurred during that period.
(Authority for term: OAC rules 3745-77-07(A)(3)(c)(i) and (ii))

iv. Each written report shall be signed by a responsible official certifying that, "based on information and belief formed after reasonable inquiry, the statements and information in the report (including any written malfunction reports required by OAC rule 3745-15-06 that are referenced in the deviation reports) are true, accurate, and complete."
(Authority for term: OAC rule 3745-77-07(A)(3)(c)(iv))

v. Reports of any required monitoring and/or record keeping information shall be submitted to the appropriate Ohio EPA District Office or local air agency.
(Authority for term: OAC rule 3745-77-07(A)(3)(c))

2. Scheduled Maintenance

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. Except as provided in OAC rule 3745-15-06(A)(3), any scheduled maintenance necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emissions unit(s) that is (are) served by such control system(s). Any scheduled maintenance, as defined in OAC rule 3745-15-06(A)(1), that results in a deviation from a federally enforceable emission limitation (or control requirement) shall be reported in the same manner as described for malfunctions in General Term and Condition A.1.c.i above.
(Authority for term: OAC rule 3745-77-07(A)(3)(c))

3. Risk Management Plans

If applicable, the permittee shall develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq. ("Act"); and, pursuant to 40 C.F.R. 68.215(a), the permittee shall submit either of the following:

a. a compliance plan for meeting the requirements of 40 C.F.R. Part 68 by the date specified in 40 C.F.R. 68.10(a) and OAC 3745-104-05(A); or

b. as part of the compliance certification submitted under 40 C.F.R. 70.6(c)(5), a certification statement that the source is in compliance with all requirements of 40 C.F.R. Part 68 and OAC Chapter 3745-104, including the registration and submission of the risk management plan.

(Authority for term: OAC rule 3745-77-07(A)(4))

4. Title IV Provisions

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.

(Authority for term: OAC rule 3745-77-07(A)(5))

5. Severability Clause

A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.
(Authority for term: OAC rule 3745-77-07(A)(6))

6. General Requirements

a. The permittee must comply with all terms and conditions of this permit. Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and reissuance, or modification, or for denial of a permit renewal application.

b. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the federally enforceable terms and conditions of this permit.

c. This permit may be modified, reopened, revoked, or revoked and reissued, for cause, in accordance with A.10 below. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.

d. This permit does not convey any property rights of any sort, or any exclusive privilege.

e. The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

(Authority for term: OAC rule 3745-77-07(A)(7))

7. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78.
(Authority for term: OAC rule 3745-77-07(A)(8))

8. Marketable Permit Programs

No revision of this permit is required under any approved economic incentive, marketable permits, emissions trading, and other similar programs or processes for changes that are provided for in this permit.
(Authority for term: OAC rule 3745-77-07(A)(9))

9. Reasonably Anticipated Operating Scenarios

The permittee is hereby authorized to make changes among operating scenarios authorized in this permit without notice to the Ohio EPA, but, contemporaneous with making a change from one operating scenario to another, the permittee must record in a log at the permitted facility the scenario under which the permittee is operating. The permit shield provided in these general terms and conditions shall apply to all operating scenarios authorized in this permit.
(Authority for term: OAC rule 3745-77-07(A)(10))

10. Reopening for Cause

This Title V permit will be reopened prior to its expiration date under the following conditions:

a. Additional applicable requirements under the Act become applicable to one or more emissions units covered by this permit, and this permit has a remaining term of three or more years. Such a reopening shall be completed not later than eighteen (18) months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to paragraph (E)(1) of OAC rule 3745-77-08.

b. This permit is issued to an affected source under the acid rain program and additional requirements (including excess emissions requirements) become applicable. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit, and shall not require a reopening of this permit.

c. The Director of the Ohio EPA or the Administrator of the U.S. EPA determines that the federally applicable requirements in this permit are based on a material mistake, or that inaccurate statements were made in establishing the emissions standards or other terms and conditions of this permit related to such federally applicable requirements.

d. The Administrator of the U.S. EPA or the Director of the Ohio EPA determines that this permit must be revised or revoked to assure compliance with the applicable requirements.

(Authority for term: OAC rules 3745-77-07(A)(12) and 3745-77-08(D))

11. Federal and State Enforceability

Only those terms and conditions designated in this permit as federally enforceable, that are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA, the State, and citizens under the Act. All other terms and conditions of this permit shall not be federally enforceable and shall be enforceable under State law only.

(Authority for term: OAC rule 3745-77-07(B))

12. Compliance Requirements

a. Any document (including reports) required to be submitted and required by a federally applicable requirement in this Title V permit shall include a certification by a responsible official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.

b. Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:

i. At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.

ii. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with paragraph (E) of OAC rule 3745-77-03.

iii. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.

iv. As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.

c. The permittee shall submit progress reports to the appropriate Ohio EPA District Office or local air agency concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually, or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:

i. Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.
ii. An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

d. Compliance certifications concerning the terms and conditions contained in this permit that are federally enforceable emission limitations, standards, or work practices, shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) and the Administrator of the U.S. EPA in the following manner and with the following content:

i. Compliance certifications shall be submitted annually on a calendar year basis. The annual certification shall be submitted on or before April 30th of each year during the permit term.
ii. Compliance certifications shall include the following:
(a) An identification of each term or condition of this permit that is the basis of the certification.
(b) The permittee's current compliance status.
(c) Whether compliance was continuous or intermittent.
(d) The method(s) used for determining the compliance status of the source currently and over the required reporting period.
(e) Such other facts as the Director of the Ohio EPA may require in the permit to determine the compliance status of the source.
iii. Compliance certifications shall contain such additional requirements as may be specified pursuant to sections 114(a)(3) and 504(b) of the Act.

(Authority for term: OAC rules 3745-77-07(C)(1),(2),(4) and (5) and ORC section 3704.03(L))

13. Permit Shield

a. Compliance with the terms and conditions of this permit (including terms and conditions established for alternate operating scenarios, emissions trading, and emissions averaging, but excluding terms and conditions for which the permit shield is expressly prohibited under OAC rule 3745-77-07) shall be deemed compliance with the applicable requirements identified and addressed in this permit as of the date of permit issuance.

b. This permit shield provision shall apply to any requirement identified in this permit pursuant to OAC rule 3745-77-07(F)(2), as a requirement that does not apply to the source or to one or more emissions units within the source.

(Authority for term: OAC rule 3745-77-07(F))

14. Operational Flexibility

The permittee is authorized to make the changes identified in OAC rule 3745-77-07(H)(1)(a) to (H)(1)(c) within the permitted stationary source without obtaining a permit revision, if such change is not a modification under any provision of Title I of the Act [as defined in OAC rule 3745-77-01(JJ)], and does not result in an exceedance of the emissions allowed under this permit (whether expressed therein as a rate of emissions or in terms of total emissions), and the permittee provides the Administrator of the U.S. EPA and the appropriate Ohio EPA District Office or local air agency with written notification within a minimum of seven days in advance of the proposed changes, unless the change is associated with, or in response to, emergency conditions. If less than seven days notice is provided because of a need to respond more quickly to such emergency conditions, the permittee shall provide notice to the Administrator of the U.S. EPA and the appropriate District Office of the Ohio EPA or local

air agency as soon as possible after learning of the need to make the change. The notification shall contain the items required under OAC rule 3745-77-07(H)(2)(d).
(Authority for term: OAC rules 3745-77-07(H)(1) and (2))

15. Emergencies

The permittee shall have an affirmative defense of emergency to an action brought for noncompliance with technology-based emission limitations if the conditions of OAC rule 3745-77-07(G)(3) are met. This emergency defense provision is in addition to any emergency or upset provision contained in any applicable requirement.
(Authority for term: OAC rule 3745-77-07(G))

16. Off-Permit Changes

The owner or operator of a Title V source may make any change in its operations or emissions at the source that is not specifically addressed or prohibited in the Title V permit, without obtaining an amendment or modification of the permit, provided that the following conditions are met:

a. The change does not result in conditions that violate any applicable requirements or that violate any existing federally enforceable permit term or condition.

b. The permittee provides contemporaneous written notice of the change to the Director and the Administrator of the U.S. EPA. Such written notice shall describe each such change, the date of such change, any change in emissions or pollutants emitted, and any federally applicable requirement that would apply as a result of the change.

c. The change shall not qualify for the permit shield under OAC rule 3745-77-07(F).

d. The permittee shall keep a record describing all changes made at the source that result in emissions of a regulated air pollutant subject to an applicable requirement, but not otherwise regulated under the permit, and the emissions resulting from those changes.

e. The change is not subject to any applicable requirement under Title IV of the Act or is not a modification under any provision of Title I of the Act.

Paragraph (I) of rule 3745-77-07 of the Administrative Code applies only to modification or amendment of the permittee's Title V permit. The change made may require a permit to install under Chapter 3745-31 of the Administrative Code if the change constitutes a modification as defined in that Chapter. Nothing in paragraph (I) of rule 3745-77-07 of the Administrative Code shall affect any applicable obligation under Chapter 3745-31 of the Administrative Code.
(Authority for term: OAC rule 3745-77-07(I))

17. Compliance Method Requirements

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defenses otherwise available to the permittee, including but not limited to, any challenge to the Credible Evidence Rule (see 62 Fed. Reg. 8314, Feb. 24, 1997), in the context of any future proceeding.
(This term is provided for informational purposes only.)

18. Insignificant Activities

Each insignificant activity that has one or more applicable requirements shall comply with those applicable requirements.
(Authority for term: OAC rule 3745-77-07(A)(1))

19. Permit to Install Requirement

Prior to the "installation" or "modification" of any "air contaminant source," as those terms are defined in OAC rule 3745-31-01, a permit to install must be obtained from the Ohio EPA pursuant to OAC Chapter 3745-31.
(Authority for term: OAC rule 3745-77-07(A)(1))

20. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.
(Authority for term: OAC rule 3745-77-07(A)(1))

21. Permanent Shutdown of an Emissions Unit

The permittee may notify Ohio EPA of any emissions unit that is permanently shut down by submitting a certification by the responsible official of the date on which the emissions unit was permanently shut down. Authorization to operate the affected part or activity of the stationary source shall cease upon the date certified by the responsible official that the emissions unit was permanently shut down.

If an emissions unit is permanently shut down (i.e., that 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 and therefore ceases to meet the definition of an "emissions unit" as defined in OAC rule 3745-77-01(O)), rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the date of the certification and submission to Ohio EPA, to meet any monitoring, record keeping, reporting, or testing requirements, applicable to that emissions unit, except for any residual requirements, such as the quarterly deviation reports, semi-annual deviation reports and annual compliance certification covering the period during which the emissions unit last operated. All records relating to the shutdown emissions unit, generated while the emissions unit was in operation, must be maintained in accordance with law.

No emissions unit certified by the responsible official as being permanently shut down may resume operation without first applying for and obtaining a permit to install pursuant to OAC Chapter 3745-31.

B. *State Only Enforceable Section*

1. Reporting Requirements Related to Monitoring and Record Keeping Requirements

The permittee shall submit required reports in the following manner:

a. Reports of any required monitoring and/or record keeping information shall be submitted to the appropriate Ohio EPA District Office or local air agency.

b. Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (i) any deviations (excursions) from emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and record keeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the appropriate Ohio EPA District Office or local air agency. In identifying each deviation, the permittee shall specify the applicable requirement for which the deviation occurred, describe each deviation, and provide the magnitude and duration of each deviation. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

2. Records Retention Requirements

Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.

3. Inspections and Information Requests

The Director of the Ohio EPA, or an authorized representative of the Director, may, subject to the safety requirements of the permittee and without undue delay, enter upon the premises of this source at any reasonable time for purposes of making inspections, conducting tests, examining records or reports pertaining to any emission of air contaminants, and determining compliance with any applicable State air pollution laws and regulations and the terms and conditions of this permit. The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon verbal or written request, the permittee shall also furnish to the Director of the Ohio EPA, or an authorized representative of the Director, copies of records required to be kept by this permit.

4. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction of any emissions units or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with paragraph (B) of OAC rule 3745-15-06. Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emissions unit(s) that is (are) served by such control system(s).

5. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The appropriate Ohio EPA District Office or local air agency must be notified in writing of any transfer of this permit.

6. Additional Reporting Requirements When There Are No Deviations of <u>Federally Enforceable</u> Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations (See Section A of This Permit)

If no emission limitation (or control requirement), operational restriction and/or control device parameter limitation deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted by January 31, April 30, July 31, and October 31 of each year; and each report shall cover the previous calendar quarter.

The permittee is not required to submit a quarterly report which states that no deviations occurred during that quarter for the following situations:

a. where an emissions unit has deviation reporting requirements for a specific emission limitation, operational restriction, or control device parameter limitation that override the deviation reporting requirements specified in General Term and Condition A.1.c.ii;

b. where an uncontrolled emissions unit has no monitoring, record keeping, or reporting requirements and the emissions unit's applicable emission limitations are established at the potentials to emit; and

c. where the company's responsible official has certified that an emissions unit has been permanently shut down.

Part II - Specific Facility Terms and Conditions

A. State and Federally Enforceable Section

1. Subpart FFFF for Miscellaneous Organic Chemical Manufacturing

I. The Standard

The permittee shall comply with the applicable provisions of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Miscellaneous Organic Chemical Manufacturing as promulgated by the United States Environmental Protection Agency under 40 CFR 63, Subpart FFFF.

The final rules found in 40 CFR 63, Subpart FFFF establish emission limits and work practice standards and compliance requirements for miscellaneous organic chemical manufacturing process units (MCPU), wastewater and conveyance systems, transfer operations, storage tanks, and ancillary equipment associated with the MCPU. The following reactor systems may be subject to this subpart: P103, P104, P106, P107, P113, P114, P115, P116, P124, P125, P126 (insignificant emission unit), P127, and P128, including their associated tanks (listed as insignificant emission units in Part II, Section B.1) and chemical transfer and loading to and from the tanks and the reactor systems.

Purpose of this subpart [63.2430]

This subpart establishes national emission standards for hazardous air pollutants (NESHAP) for miscellaneous organic chemical manufacturing. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limits, operating limits, and work practice standards.

2. Subject facility [63.2435]

(a) The permittee is subject to the requirements in this subpart for the operation of miscellaneous organic chemical manufacturing process units (MCPU) that are located at, or are part of, a major source of hazardous air pollutants (HAP) emissions as defined in section 112(a) of the Clean Air Act (CAA).

(b) A MCPU includes equipment necessary to operate a miscellaneous organic chemical manufacturing process, as defined in 63.2550, that satisfies all of the conditions specified in paragraphs (b)(1) through (3) of this section. A MCPU also includes any assigned storage tanks and product transfer racks; equipment in open systems that is used to convey or store water having the same concentration and flow characteristics as wastewater; and components such as pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems that are used to manufacture any material or family of materials described in paragraphs (b)(1)(i) through (v) as follows:

(1) The MCPU produces material or family of materials that is described in paragraph (b)(1)(i), (ii), (iii), (iv), or (v) as follows:

(i) an organic chemical or chemicals classified using the 1987 version of SIC code 282, 283, 284, 285, 286, 287, 289, or 386, except as provided in paragraph (c)(5) of this section;

(ii) an organic chemical or chemicals classified using the 1997 version of NAICS code 325, except as provided in paragraph (c)(5) of this section;

(iii) quaternary ammonium compounds and ammonium sulfate produced with caprolactam;

(iv) hydrazine; and

(v) organic solvents classified in any of the SIC or NAICS codes listed in paragraph (b)(1)(i) or (ii) of this section that are recovered using nondedicated solvent recovery operations.

A. State and Federally Enforceable Section (continued)

(2) The MCPU processes, uses, or produces any of the organic HAP listed in section 112(b) of the CAA or hydrogen halide and halogen HAP, as defined in 63.2550.

(3) The MCPU is not an affected source or part of an affected source under another subpart of this part 63, except for process vents from batch operations within a chemical manufacturing process unit (CMPU), as identified in 63.100(j)(4). For this situation, the MCPU is the same as the CMPU as defined in 63.100, and such permitted source would be subject only to the requirements for batch process vents in this subpart.

(c) The requirements in this subpart do not apply to the operations specified in paragraphs (c)(1) through (6) of this section, as follows:

(1) research and development facilities, as defined in section 112(c)(7) of the CAA;

(2) the manufacture of ammonium sulfate as a by-product, if the slurry entering the by-product manufacturing process contains 50 parts per million by weight (ppmw) HAP or less or 10 ppmw benzene or less. The permittee shall retain information, data, and analysis to document the HAP concentration in the entering slurry in order to claim this exemption;

(3) the affiliated operations located at an affected source under subparts GG (National Emission Standards for Aerospace Manufacturing and Rework Facilities), KK (National Emission Standards for the Printing and Publishing Industry), JJJJ (NESHAP: Paper and Other Web Coating), future MMMM (NESHAP: Surface Coating of Miscellaneous Metal Parts and Products), and SSSS (NESHAP: Surface Coating of Metal Coil) of this part 63. Affiliated operations include, but are not limited to, mixing or dissolving of coating ingredients; coating mixing for viscosity adjustment, color tint or additive blending, or pH adjustment; cleaning of coating lines and coating line parts; handling and storage of coatings and solvent; and conveyance and treatment of wastewater;

(4) fabricating operations such as spinning a polymer into its end use;

(5) production activities described using the 1997 version of NAICS codes 325131, 325181, 325188 (except the requirements do apply to hydrazine), 325314, 325991 (except the requirements do apply to reformulating plastics resins from recycled plastics products), and 325992 (except the requirements do apply to photographic chemicals); and/or

(6) tall oil recovery systems.

A. State and Federally Enforceable Section (continued)

(d) If the predominant use of a transfer rack loading arm or storage tank (including storage tanks in series) is associated with a miscellaneous organic chemical manufacturing process, and the loading arm or storage tank is not part of an affected source under a subpart of this part 63, the permittee shall assign the loading arm or storage tank to the MCPU for that miscellaneous organic chemical manufacturing process.

If the predominant use of a transfer rack loading arm or storage tank cannot be determined, then the permittee may assign the loading arm or storage tank to any MCPU that shares it and is subject to this subpart.

If the predominant use of a transfer rack loading arm or storage tank varies from year to year, then the permittee shall base the determination on the utilization that occurred during the year preceding November 10, 2003 (the date of publication of this final rule in the Federal Register) or, if the loading arm or storage tank was not in operation during that year, the permittee shall base the use on the expected use for the first 5-year period following startup.

The permittee shall include the above determination in the notification of compliance status report specified in 63.2520(d) and shall redetermine the primary use of each transfer rack loading arm or storage tank at least once every 5 years, or any time emissions averaging or pollution prevention is implemented following the compliance date.

(e) For nondedicated equipment used to create at least one MCPU, the permittee may elect to develop process unit groups (PUG), determine the primary product of each PUG, and comply with the requirements of the subpart in 40 CFR part 63 that applies to that primary product as specified in 63.2535(l).

3. Applicability of Subpart FFFF [63.2440]

(a) This subpart applies to each miscellaneous organic chemical manufacturing affected source.

(b) The miscellaneous organic chemical manufacturing affected source is the facilitywide collection of MCPU and heat exchange systems, wastewater, and waste management units that are associated with manufacturing materials described in 63.2435(b)(1).

(c) A new affected source is described by either paragraph (c)(1) or (2) as follows:

(1) each affected source defined in paragraph (b) of this section for which construction or reconstruction commenced after April 4, 2002, and which meets the applicability criteria at the time construction or reconstruction commenced; and

(2) each dedicated MCPU that has the potential to emit 10 tons per year (tpy) of any one HAP or 25 tpy of combined HAP, and construction or reconstruction of the MCPU commenced after April 4, 2002. For the purposes of this paragraph, an MCPU is an affected source in the definition of the term "reconstruction" in 63.2.

(d) A MCPU that is also a CMPU under 63.100 is reconstructed for the purposes of this subpart if, and only if, the CMPU meets the requirements for reconstruction in 63.100(l)(2).

A. State and Federally Enforceable Section (continued)

4. Compliance Dates [63.2445]

(a) If the permittee installs a new affected source, compliance with this subpart shall be attained according to the requirements in paragraphs (a)(1) and (2) as follows:

(1) If the new affected source starts up before November 10, 2003, then the permittee must comply with the requirements for new sources in this subpart no later than November 10, 2003.

(2) If the new affected source starts up after November 10, 2003, then the permittee must comply with the requirements for new sources in this subpart upon startup of the affected source.

(b) The existing emission units subject to this subpart, including all the equipment, tanks, transfer operations, and insignificant emissions units associated with the subject emissions units (where applicable), shall attain compliance with 40 CFR 63 Subpart FFFF by November 10, 2006.

(c) The permittee shall meet the notification requirements in 63.2515 according to the schedule in 63.2515 and in 40 CFR part 63, subpart A. Some of the notifications must be submitted before the required compliance date with the emission limits, operating limits, and work practice standards in this subpart.

5. Compliance options when subject to more than one subpart of 60 CFR 63 [63.2535]

For any equipment, emission stream, or wastewater stream subject to the provisions of both this subpart and another rule, the permittee may elect to comply only with the provisions as specified in paragraphs (a) through (l) of this section. The permittee shall also identify the subject equipment, emission stream, or wastewater stream, and the provisions with which compliance shall be demonstrated, in the notification of compliance status report required by 63.2520(d).

(a) Compliance with other subparts of this part 63. If a MCPU includes a batch process vent that also is part of a CMPU as defined in subparts F and G of part 63, the permittee shall comply with the emission limits; operating limits; work practice standards; and the compliance, monitoring, reporting and recordkeeping requirements for batch process vents in this subpart (subpart FFFF), and shall continue to comply with the requirements in subparts F, G, and H of this part 63 that are applicable to the CMPU and associated equipment.

(b) Compliance with 40 CFR parts 264 and 265, subparts AA, BB, and/or CC.

(1) Following the compliance dates specified in 63.2445, a permittee having a control device that is used to comply with this subpart (FFFF) and it is also subject to monitoring, recordkeeping, and reporting requirements in 40 CFR part 264, subpart AA, BB, or CC; or the monitoring and recordkeeping requirements in 40 CFR part 265, subpart AA, BB, or CC; and the device is in compliance with the periodic reporting requirements under 40 CFR part 264, subpart AA, BB, or CC that would apply to the control device if the permittee had final-permitted status, may elect to comply either with the monitoring, recordkeeping, and reporting requirements of this subpart; or with the monitoring and recordkeeping requirements in 40 CFR part 264 or 265 and the reporting requirements in 40 CFR part 264, as described in this paragraph (b)(1), which constitute compliance with the monitoring, recordkeeping, and reporting requirements of this subpart. If the permittee elects to comply with the monitoring, recordkeeping, and reporting requirements in 40 CFR parts 264 and/or 265, the information required in 63.2520(e) shall also be reported.

(2) Following the compliance dates specified in 63.2445, if an affected source has equipment that is also subject to 40 CFR part 264, subpart BB, or to 40 CFR part 265, subpart BB, compliance with the recordkeeping and reporting requirements of 40 CFR parts 264 and/or 265 may be used to comply with the recordkeeping and reporting requirements of this subpart, to the extent that the requirements of 40 CFR parts 264 and/or 265 duplicate the requirements of this subpart.

A. State and Federally Enforceable Section (continued)

(c) Compliance with 40 CFR part 60, subpart Kb and 40 CFR part 61, subpart Y. Following the compliance dates specified in 63.2445, the permittee is considered in compliance with the provisions of this subpart FFFF for any storage tank that is assigned to an MCPU and that is both controlled with a floating roof and in compliance with the provisions of either 40 CFR part 60, subpart Kb, or 40 CFR part 61, subpart Y. Compliance with this subpart FFFF is also demonstrated for any storage tank with a fixed roof, closed-vent system, and control device in compliance with the provisions of either 40 CFR part 60, subpart Kb, or 40 CFR part 61, subpart Y, except that the permittee shall comply with the monitoring, recordkeeping, and reporting requirements in this subpart FFFF. Alternatively, if a storage tank assigned to an MCPU is subject to control under 40 CFR part 60, subpart Kb, or 40 CFR part 61, subpart Y, the permittee may elect to comply only with the requirements for Group 1 storage tanks in this subpart FFFF.

(d) Compliance with subpart I, GGG, or MMM of this part 63. Following the compliance dates specified in 63.2445, a facility having an affected source with equipment subject to subpart I, GGG, or MMM of this part 63, may elect to demonstrate compliance with the provisions of subpart H, GGG, or MMM of this part 63, respectively, for all such equipment.

(e) Compliance with subpart GGG of this part 63 for wastewater. Following the compliance dates specified in 63.2445, a facility having an affected source subject to this subpart and an affected source that generates wastewater streams that meet the applicability thresholds specified in 63.1256, may elect to comply with the provisions of this subpart FFFF for all such wastewater streams.

(f) Compliance with subpart MMM of this part 63 for wastewater. Following the compliance dates specified in 63.2445, a facility having an affected source subject to this subpart, and an affected source that generates wastewater streams that meet the applicability thresholds specified in 63.1362(d), may elect to comply with the provisions of this subpart FFFF for all such wastewater streams (except that the 99 percent reduction requirement for streams subject to 63.1362(d)(10) still applies).

(g) Compliance with other regulations for wastewater. Following the compliance dates specified in 63.2445, a facility having a Group 1 wastewater stream that is also subject to provisions in 40 CFR parts 260 through 272, may elect to determine whether this subpart or 40 CFR parts 260 through 272 contain the more stringent control requirements (e.g., design, operation, and inspection requirements for waste management units; numerical treatment standards; etc.) and the more stringent testing, monitoring, recordkeeping, and reporting requirements. Compliance with provisions of 40 CFR parts 260 through 272 that are determined to be more stringent than the requirements of this subpart constitute compliance with this subpart. For example, provisions of 40 CFR parts 260 through 272 for treatment units that meet the conditions specified in 63.138(h) constitute compliance with this subpart. The permittee shall identify in the notification of compliance status report, required by 63.2520(d), the information and procedures that were used to make any stringency determinations.

(h) Compliance with 40 CFR part 60, subpart DDD, III, NNN, or RRR. Following the compliance dates specified in 63.2445, a facility having an MCPU that contains equipment subject to the provisions of this subpart that are also subject to the provisions of 40 CFR part 60, subpart DDD, III, NNN, or RRR, may elect to apply this subpart to all such equipment in the MCPU. If a MCPU subject to the provisions of this subpart has equipment to which this subpart does not apply but which is subject to a standard in 40 CFR part 60, subpart DDD, III, NNN, or RRR, the permittee may elect to comply with the requirements for Group 1 process vents in this subpart for such equipment. If the facility elects any of these methods of compliance, all total organic compounds, minus methane and ethane, shall be considered in such equipment for purposes of compliance with this subpart, as if they were organic HAP. Compliance with the provisions of this subpart, in the manner described in this paragraph (h), will constitute compliance with 40 CFR part 60, subpart DDD, III, NNN, or RRR, as applicable.

A. State and Federally Enforceable Section (continued)

(i) Compliance with 40 CFR part 61, subpart BB.

(1) Following the compliance dates specified in 63.2445, a Group 1 transfer rack, as defined in 63.2550, that is also subject to the provisions of 40 CFR part 61, subpart BB, must maintain the required compliance only with the provisions of this subpart.

(2) Following the compliance dates specified in 63.2445, a Group 2 transfer rack, as defined in 63.2550, that is also subject to the provisions of 40 CFR part 61, subpart BB, is required to comply with the provisions of either paragraph (l)(2)(i) or (ii) of this section, as follows:

(i) If the transfer rack is subject to the control requirements specified in 61.302 of 40 CFR part 61, subpart BB, the permittee may elect to comply with either the requirements of 40 CFR part 61, subpart BB, or the requirements for Group 1 transfer racks under this subpart FFFF.

(ii) If the transfer rack is subject only to reporting and recordkeeping requirements under 40 CFR part 61, subpart BB, the permittee shall be required to comply only with the reporting and recordkeeping requirements specified in this subpart for Group 2 transfer racks, and shall be exempt from the reporting and recordkeeping requirements in 40 CFR part 61, subpart BB.

(j) Compliance with 40 CFR part 61, subpart FF. Following the compliance date specified in 63.2445, a facility having a Group 1 or Group 2 wastewater stream that is also subject to the provisions of 40 CFR 61.342(c) through (h), and is not exempt under 40 CFR 61.342(c)(2) or (3), may elect to comply only with the requirements for Group 1 wastewater streams in this subpart FFFF. If a Group 2 wastewater stream is exempted from 40 CFR 61.342(c)(1) under 40 CFR 61.342(c)(2) or (3), the facility shall be required to comply only with the reporting and recordkeeping requirements specified in this subpart for Group 2 wastewater streams, and shall be exempt from the requirements in 40 CFR part 61, subpart FF.

(k) Compliance with 40 CFR part 60, subpart VV, and 40 CFR part 61, subpart V. Following the compliance date specified in 63.2445,a facility having an affected source with equipment that is also subject to the requirements of 40 CFR part 60, subpart VV, or 40 CFR part 61, subpart V, may elect to apply this subpart to all such equipment. Alternatively, if the facility has an affected source with no continuous process vents and equipment that is also subject to the requirements of 40 CFR part 60, subpart VV, or 40 CFR part 61, subpart V, the facility may elect to comply with 40 CFR part 60, subpart VV or 40 CFR part 61, subpart V, as applicable, for all such equipment.

A. State and Federally Enforceable Section (continued)

(l) Applicability of process units included in a process unit group. The permittee may elect to develop and comply with the requirements for PUG in accordance with paragraphs (l)(1) through (3) of this section, as follows:

(1) Procedures to create process unit groups. Develop and document changes in a PUG in accordance with the procedures specified in paragraphs (l)(1)(i) through (v) of this section, as follows:

(i) initially, identify an MCPU that is created from nondedicated equipment that will operate on or after November 10, 2003, and identify all processing equipment that is part of this MCPU, based on descriptions in operating scenarios

(ii) add to the group any other nondedicated MCPU and other nondedicated process units expected to be operated in the 5 years after the date specified in paragraph (l)(1)(i) of this section, provided they satisfy the criteria specified in the following paragraphs (l)(1)(ii)(A) through (C) of this section. Also identify all of the processing equipment used for each process unit based on information from operating scenarios and other applicable documentation:

(A) Each process unit that is added to a group must have some processing equipment that is also part of one or more process units in the group.

(B) No process unit may be part of more than one PUG.

(C) The processing equipment used to satisfy the requirement of paragraph (l)(1)(ii)(A) of this section may not be a storage tank or control device.

(iii) The initial PUG consists of all of the processing equipment for the process units identified in paragraphs (l)(1)(i) and (ii) of this section. As an alternative to the procedures specified in paragraphs (l)(1)(i) and (ii) of this section, the permittee may use a PUG that was developed in accordance with 63.1360(h) as the initial PUG.

(iv) Add process units developed in the future in accordance with the conditions specified in paragraphs (l)(1)(ii)(A) and (B) of this section.

(v) Maintain records that describe the process units in the initial PUG, the procedure used to create the PUG, and subsequent changes to each PUG as specified in 63.2525(i). Submit the records in reports as specified in 63.2520(d)(2)(ix) and (e)(8).

(2) Determine primary product. The permittee shall determine the primary product of each PUG created in paragraph (l)(1) of this section according to the procedures specified in paragraphs (l)(2)(i) through (iv) of this section, as follows:

(i) The primary product is the type of product (e.g., organic chemicals subject to 63.2435(b)(1), pharmaceutical products subject to 63.1250, or pesticide active ingredients subject to 63.1360) expected to be produced for the greatest operating time in the 5-year period specified in paragraph (l)(1)(ii) of this section.

(ii) If the PUG produces multiple types of products equally based on operating time, then the primary product is the type of product with the greatest production on a mass basis over the 5-year period specified in paragraph (l)(1)(ii) of this section.

(iii) At a minimum, the primary product shall be redetermined every 5 years for the PUG, following the procedure specified in paragraphs (l)(2)(i) and (ii) of this section.

A. State and Federally Enforceable Section (continued)

(iv) The permittee shall record the calculation of the initial primary product determination as specified in 63.2525(i)(3) and report the results in the notification of compliance status report as specified in 63.2520(d)(8)(ix). The permittee shall record the calculation of each redetermination of the primary product as specified in 63.2525(i)(5) and report the calculation in a compliance report submitted no later than the report covering the period for the end of the 5th year after cessation of production of the previous primary product, as specified in 63.2520(e)(8).

(3) Compliance requirements.

(i) The permittee shall comply with this subpart for each MCPU in the PUG if the primary product of the PUG is determined according to paragraph (l)(2) of this section to be material described in 63.2435(b)(1). The permittee may also elect to comply with this subpart for all other process units in the PUG, which constitutes compliance with other part 63 rules.

(ii) The permittee shall comply with following paragraph (l)(3)(ii)(A), (B), or (C) of this section, as applicable, if the primary product of the PUG is determined according to paragraph (l)(2) of this section to be material not described in 63.2435(b)(1):

(A) If the primary product is subject to subpart GGG of this part 63, comply with the requirements of subpart GGG for each MCPU in the PUG.

(B) If the primary product is subject to subpart MMM of this part 63, comply with the requirements of subpart MMM for each MCPU in the PUG.

(C) If the primary product is subject to any subpart in this part 63 other than subpart GGG or subpart MMM, comply with the requirements of this subpart for each MCPU in the PUG.

(iii) The requirements for new and reconstructed sources in the alternative subpart apply to all MCPU in the PUG if and only if the affected source under the alternative subpart meets the requirements for construction or reconstruction.

6. Applicable General Provisions [63.2540]

Table 12 to this subpart shows which parts of the General Provisions in 63.1 through 63.15 apply to each MCPU.

7. Implementation and Enforcement of this subpart [63.2545]

(a) This subpart can be implemented and enforced by the U.S. Environmental Protection Agency (U.S. EPA), or through the delegated authority of the Ohio EPA. As the U.S. EPA Administrator has delegated authority to the Ohio EPA, the Ohio EPA also has the authority to implement and enforce this subpart.

(b) In delegating implementation and enforcement authority of this subpart to the Ohio EPA under 40 CFR part 63, subpart E, the authorities contained in paragraphs (b)(1) through (4) of this section are retained by the Administrator of U.S. EPA and are not delegated to the State, local, or tribal agency:

(1) approval of alternatives to the non-opacity emission limits and work practice standards in 63.2450(a) under 63.6(g);

(2) approval of major alternatives to test methods under 63.7(e)(2)(ii) and (f) and as defined in 63.90;

(3) approval of major alternatives to monitoring under 63.8(f) and as defined in 63.90; and

(4) approval of major alternatives to recordkeeping and reporting under 63.10(f) and as defined in 63.90.

(c) Delegation of the implementation and enforcement authority of this subpart to the State of Ohio was promulgated in 40CFR62 with the approval of OAC rules 3745-31-28.

A. State and Federally Enforceable Section (continued)

8. II. Applicable Emission Limits, Work Practice Standards, Compliance and Operational Requirements

General requirements [63.2450]

(a) The permittee shall be in compliance with the emission limits and work practice standards in Tables 1 through 7 to this subpart at all times, except during periods of startup, shutdown, and malfunction (SSM), and shall meet the requirements specified in 63.2455 through 63.2490 (or the alternative means of compliance in 63.2495, 63.2500, or 63.2505), except as specified in paragraphs (b) through (s) of this section. The permittee shall also meet the notification, reporting, and recordkeeping requirements specified in 63.2515, 63.2520, and 63.2525.

(b) Determine halogenated vent streams. The permittee shall determine if an emission stream is a halogenated vent stream, as defined in 63.2550, by calculating the mass emission rate of halogen atoms in accordance with 63.115(d)(2)(v). Alternatively, the permittee may elect to designate the emission stream as halogenated.

(c) Requirements for combined emission streams. When organic HAP emissions from different emission types (e.g., continuous process vents, batch process vents, storage tanks, transfer operations, and waste management units) are combined, the permittee shall comply with the requirements of either paragraph (c)(1) or (2) as follows:

(1) comply with the applicable requirements of this subpart for each kind of organic HAP emissions in the stream (e.g., the requirements of Table 1 to this subpart for continuous process vents and the requirements of Table 4 to this subpart for emissions from storage tanks); or

(2) determine the applicable requirements based on the hierarchy presented in paragraphs (c)(2)(i) through (vi) of this section. For a combined stream, the applicable requirements are specified in the highest-listed paragraph in the hierarchy that applies to any of the individual streams that make up the combined stream. For example, if a combined stream consists of emissions from Group 1 batch process vents and any other type of emission stream, then the permittee must comply with the requirements in paragraph (c)(2)(i) of this section for the combined stream; compliance with the requirements in paragraph (c)(2)(i) of this section constitutes compliance for the other emission streams in the combined stream. Two exceptions to this hierarchy are found in Table 3 to this subpart and 63.2465 for all process vents with hydrogen halide and halogen HAP emissions and recordkeeping requirements for Group 2 applicability, for which compliance is still required (e.g., the requirement in 63.2525(f) to track the number of batches produced and calculate rolling annual emissions for processes with Group 2 batch process vents). The hierarchy of requirements are as follows:

(i) the requirements of Table 2 to this subpart and 63.2460 for Group 1 batch process vents, including applicable monitoring, recordkeeping, and reporting;

(ii) the requirements of Table 1 to this subpart and 63.2455 for continuous process vents that are routed to a control device, as defined in 63.981, including applicable monitoring, recordkeeping, and reporting;

(iii) the requirements of Table 5 to this subpart and 63.2475 for transfer operations, including applicable monitoring, recordkeeping, and reporting;

A. State and Federally Enforceable Section (continued)

(iv) the requirements of Table 7 to this subpart and 63.2485 for emissions from waste management units that are used to manage and treat Group 1 wastewater streams and residuals from Group 1 wastewater streams, including applicable monitoring, recordkeeping, and reporting;

(v) the requirements of Table 4 to this subpart and 63.2470 for control of emissions from storage tanks, including applicable monitoring, recordkeeping, and reporting;

(vi) the requirements of Table 2 to this subpart and 63.2455 for continuous process vents after a recovery device including applicable monitoring, recordkeeping, and reporting.

(d) Except when complying with 63.2485, if organic HAP emissions are reduced by venting emissions through a closed-vent system to any combination of control devices (except a flare) or recovery devices, the permittee shall meet the requirements of 63.982(c).

(e) Except when complying with 63.2485, if organic HAP emissions are reduced by venting emissions through a closed-vent system to a flare, the permittee shall meet the requirements of 63.982(b).

(f) If a halogen reduction device is used to reduce hydrogen halide and halogen HAP emissions from halogenated vent streams, the requirements of 63.994 must be met. If a halogen reduction device is used before a combustion device, the halogen atom emission rate prior to the combustion device must be determined according to the procedures in 63.115(d)(2)(v).

(g) Requirements for performance tests: See Section V, Testing Requirements

(h) Design evaluation: See Section V, Testing Requirements

(i) Outlet concentration correction for supplemental gases: See Section V, Testing Requirements

(j) Continuous emissions monitoring systems. Each continuous emissions monitoring system (CEMS) shall be installed, operated, and maintained according to the requirements in 63.8 and paragraphs (j)(1) through (5) as follows:

(1) Each CEMS shall be installed, operated, and maintained according to the applicable Performance Specification of 40 CFR part 60, appendix B, and according to paragraph (j)(2) of this section, except as specified in paragraph (j)(1)(i) of this section. For any CEMS meeting Performance Specification 8, compliance shall also be demonstrated with appendix F, procedure 1 of 40 CFR part 60.

(i) If a CEMS other than an Fourier Transform Infrared Spectroscopy (FTIR) is used in meeting the requirements of Performance Specification 15 to measure hydrogen halide and halogen HAP, until a specific Performance Specification is promulgated, the permittee must prepare a monitoring plan and submit it for approval in accordance with the procedures specified in 63.8.

(ii) [Reserved]

(2) The permittee shall determine the calibration gases and reporting units for TOC CEMS in accordance with paragraph (j)(2)(i), (ii), or (iii) as follows:

(i) For CEMS meeting Performance Specification 9 or 15 requirements, determine the target analyte(s) for calibration using either process knowledge of the control device inlet stream or the screening procedures of Method 18 on the control device inlet stream.

(ii) For CEMS meeting Performance Specification 8 used to monitor performance of a combustion device, calibrate the instrument on the predominant organic HAP and report the results as carbon (C1), and use Method 25A or any approved alternative as the reference method for the relative accuracy tests.

A. State and Federally Enforceable Section (continued)

(iii) For CEMS meeting Performance Specification 8 used to monitor performance of a noncombustion device, determine the predominant organic HAP using either process knowledge or the screening procedures of Method 18 on the control device inlet stream, calibrate the monitor on the predominant organic HAP, and report the results as C1. Use Method 18, ASTM D6420-99, or any approved alternative as the reference method for the relative accuracy tests, and report the results as C1.

(3) The permittee shall conduct a performance evaluation of each CEMS according to the requirements in 40 CFR 63.8 and according to the applicable Performance Specification of 40 CFR part 60, appendix B, except that the schedule in 63.8(e)(4) does not apply, and the results of the performance evaluation shall be included in the notification of compliance status report.

(4) The CEMS data shall be reduced to operating day or operating block averages computed using valid data consistent with the data availability requirements specified in 63.999(c)(6)(i)(B) through (D), except monitoring data also are sufficient to constitute a valid hour of data if measured values are available for at least two of the 15-minute periods during an hour when calibration, quality assurance, or maintenance activities are being performed. An operating block is a period of time from the beginning to end of batch operations within a process. Operating block averages may be used only for batch process vent data.

(5) If supplemental gases are added, the measured concentrations must be corrected in accordance with paragraph (i) of this section and 63.2460(c)(6).

(k) Continuous parameter monitoring. The provisions in paragraphs (k)(1) through (4) of this section apply in addition to the requirements for continuous parameter monitoring system (CPMS) in subpart SS of this part 63.

(1) The permittee shall record the results of each calibration check and all maintenance performed on the CPMS as specified in 63.998(c)(1)(ii)(A).

(2) When subpart SS of this part 63 uses the term "a range" or "operating range" of a monitored parameter, it means an "operating limit" for a monitored parameter for the purposes of this subpart.

(3) As an alternative to measuring pH as specified in 63.994(c)(1)(i), the permittee may elect to continuously monitor the caustic strength of the scrubber effluent.

(4) As an alternative to the inlet and outlet temperature monitoring requirements for catalytic incinerators as specified in 63.988(c)(2), the permittee may elect to comply with the requirements specified in paragraphs (k)(4)(i) through (iii) as follows:

(i) monitor the inlet temperature as specified in subpart SS of this part 63;

(ii) check the activity level of the catalyst at least every 12 months and take any necessary corrective action, such as replacing the catalyst to ensure that the catalyst is performing as designed; and

(iii) maintain records of the annual checks of catalyst activity levels and the subsequent corrective actions.

(l) Startup, shutdown, and malfunction. Sections 63.152(f)(7)(ii) through (iv) and 63.998(b)(2)(iii) and (b)(6)(i)(A), which apply to the exclusion of monitoring data collected during periods of SSM from daily averages, do not apply for the purposes of this subpart.

A. State and Federally Enforceable Section (continued)

(m) Reporting:

(1) When 63.2455 through 63.2490 reference other subparts in this part 63 that use the term "periodic report," it means "compliance report" for the purposes of this subpart. The compliance report shall include the information specified in 63.2520(e), as well as the information specified in referenced subparts.

(2) When there are conflicts between this subpart and referenced subparts for the due dates of reports required by this subpart, reports shall be submitted according to the due dates presented in this subpart.

(3) Excused excursions, as defined in subparts G and SS of this part 63, are not allowed.

(n) The option in 63.997(e)(2)(iv)(C) to demonstrate compliance with a percent reduction emission limit by measuring TOC is not allowed.

(o) A flare may not be used to control halogenated vent streams or hydrogen halide and halogen HAP emissions.

(p) Opening a safety device, as defined in 63.2550, is allowed at any time conditions require it to avoid unsafe conditions.

(q) If an emission stream contains energetics or organic peroxides that, for safety reasons, cannot meet an applicable emission limit specified in Tables 1 through 7 to this subpart, then documentation must be submitted in the precompliance report explaining why an undue safety hazard would be created if the air emission controls were installed, and the report must describe the procedures that will be implemented to minimize HAP emissions from these vent streams.

(r) Surge control vessels and bottoms receivers. Emission limits and work practice standards specified in Table 4 to this subpart shall be met for each surge control vessel or bottoms receiver that meets the capacity and vapor pressure thresholds for a Group 1 storage tank.

(s) For the purposes of determining Group status for continuous process vents, batch process vents, and storage tanks in 63.2455, 63.2460, and 63.2470, hydrazine is to be considered an organic HAP.

A. State and Federally Enforceable Section (continued)

9. Requirements for continuous process vents [63.2455]

(a) Continuous process vents shall meet each emission limit that applies in Table 1 to this subpart, as well as the applicable requirement specified in paragraphs (b)and (c) of this section, as follows:

(b) Each continuous process vent shall be designated as either a Group 1 continuous process vent or the total resource effectiveness (TRE) index value shall be determined as specified in 63.115(d), except as specified in paragraphs (b)(1) through (3) as follows:

(1) The Group status or the TRE index value shall not be required for any continuous process vent that is combined with Group 1 batch process vents before a control device or recovery device because the requirements of 63.2450(c)(2)(i) apply to the combined stream.

(2) When a TRE index value of 4.0 is referred to in 63.115(d), TRE index values of 5.0 for existing affected sources and 8.0 for new and reconstructed affected sources apply for the purposes of this subpart.

(3) When 63.115(d) refers to "emission reductions specified in 63.113(a)," the reductions specified in Table 1 to this subpart apply for the purposes of this subpart.

(c) If a recovery device is used to maintain the TRE above a specified threshold, the requirements of 63.982(e) and the requirements referenced therein shall be met, except as specified in 63.2450 and paragraph (c)(1) as follows:

(1) When 63.993 uses the phrase "the TRE index value is between the level specified in a referencing subpart and 4.0," the phrase "the TRE index value is >1.9 but 5.0" applies for an existing affected source, and the phrase "the TRE index value is >5.0 but 8.0" applies for a new and reconstructed affected source, for the purposes of this subpart.

(2) [Reserved]

10. Requirements for batch process vents [63.2460]

(a) Batch process vents shall meet each emission limit that applies in Table 2 to this subpart, as well as the applicable requirement specified in paragraphs (b)and (c) of this section, as follows.

(b) Group status. If a process has batch process vents, as defined in 63.2550, the group status of the batch process vents shall be determined by summing the uncontrolled organic HAP emissions from each of the batch process vents within the process, using the procedures specified in 63.1257(d)(2)(i) and (ii), except as specified in paragraphs (b)(1) through (4) as follows:

(1) Procedures in 63.1257(d)(2)(i)(C)(3) shall be used to calculate emissions caused by the heating of a vessel to a temperature lower than the boiling point.

(2) Procedures in 63.1257(d)(2)(i)(D)(10) shall be used to calculate emissions from depressurization.

(3) To calculate emissions from vacuum systems for the purposes of this subpart, the receiving vessel is part of the vacuum system, and terms used in Equation 33 to 40 CFR part 63, subpart GGG, are defined as follows:

Psystem = absolute pressure of receiving vessel;
Pi = partial pressure of the HAP at the receiver temperature;
Pj = partial pressure of condensable (including HAP) at the receiver temperature;
MWi =molecular weight of the individual HAP in the emission stream, with HAP partial pressures calculated at the temperature of the receiver.

A. State and Federally Enforceable Section (continued)

(4) The permittee may elect to designate the batch process vents within a process as Group 1 and not calculate uncontrolled emissions under either of the situations described in paragraph (b)(4)(i) or (ii) as follows:

(i) when complying with the alternative standard specified in 63.2505; and/or

(ii) when all Group 1 batch process vents within a process are controlled, the performance test may be conducted under hypothetical worst case conditions, as defined in 63.1257(b)(8)(i)(B), and the emission profile is based on capture and control system limitations as specified in 63.1257(b)(8)(ii)(C).

(c) Exceptions to the requirements in subpart SS of this part 63 are specified in paragraphs (c)(1) through (7) as follows:

(1) Process condensers. Process condensers, as defined in 63.1251, are not considered to be control devices for batch process vents.

(2) Initial compliance:

(i) In order to demonstrate initial compliance with a percent reduction emission limit in Table 2 to this subpart, the permittee shall compare the sums of the controlled and uncontrolled emissions for the applicable Group 1 batch process vents within the process and show that the specified reduction is met.

(ii) When conducting a performance test or design evaluation for a control device used to control emissions from batch process vents, the permittee shall establish emission profiles and conduct the test under worst-case conditions according to 63.1257(b)(8) instead of under normal operating conditions as specified in 63.7(e)(1). The requirements in 63.997(e)(1)(i) and (iii) also do not apply for performance tests conducted to determine compliance with the emission limits for batch process vents. References in 63.997(b)(1) to "methods specified in 63.997(e)" include the methods specified in 63.1257(b)(8).

(iii) Procedures specified in 63.1257(d)(3)(i)(B) may be used to determined controlled emissions, as an alternative to conducting a performance test or design evaluation for a condenser. An owner or operator using a condenser as a control device may determine controlled emissions using exhaust gas temperature measurements and calculations for each batch emission episode within each unit operation according the engineering methodology in paragraphs (d)(3)(i)(B)(1) through (8) of this section; and individual HAP partial pressures may be calculated as specified in paragraph 63.1257(d)(2)(i).

(iv) When 63.1257(d)(3)(i)(B)(7) specifies that condenser-controlled emissions from an air dryer must be calculated using Equation 11 of 40 CFR art 63, subpart GGG, with "V equal to the air flow rate", it means "V equal to the dryer outlet gas flow rate," for the purposes of this subpart. Alternatively, Equation 12 of 40 CFR part 63, subpart GGG may be used, with "V equal to the dryer inlet air flow rate". Time shall be accounted for, as appropriate, in either equation.

(v) The permittee shall demonstrate that each process condenser is properly operated according to the procedures specified in 63.1257(d)(2)(i)(C)(4)(ii) and (d)(3)(iii)(B). The reference in 63.1257(d)(3)(iii)(B) to the alternative standard in 63.1254(c) means 63.2505 for the purposes of this subpart. As an alternative to measuring the exhaust gas temperature, as required by 63.1257(d)(3)(iii)(B), the permittee may elect to measure the liquid temperature in the receiver.

(vi) A subsequent performance test or compliance demonstration equivalent to an initial compliance demonstration shall be conducted within 180 days of a change in the worst-case conditions.

A. State and Federally Enforceable Section (continued)

(3) Establishing operating limits. Operating limits shall be established under the conditions required for the initial compliance demonstration, except the permittee may elect to establish operating limit(s) for conditions other than those under which a performance test was conducted as specified in paragraph (c)(3)(i) and, if applicable, paragraph (c)(3)(ii) as follows:

(i) The operating limits may be based on the results of the performance test and supplementary information such as engineering assessments and manufacturer's recommendations. These limits may be established for conditions as unique as individual emission episodes for a batch process. The rationale shall be provided in the precompliance report for the specific level for each operating limit, including any data and calculations used to develop the limit and a description of why the limit indicates proper operation of the control device. The procedures provided in this paragraph (c)(3)(i) have not been approved by the Administrator and determination of the operating limit using these procedures is subject to review and approval by the Administrator.

(ii) If the permittee elects to establish separate monitoring levels for different emission episodes within a batch process, records must be maintain in the daily schedule or log of processes indicating each point at which the change is made from one operating limit to another, even if the duration of the monitoring for an operating limit is less than 15 minutes. A daily schedule or log of processes must be maintained according to 63.2525(c).

(4) Averaging periods. As an alternative to the requirement for daily averages in 63.998(b)(3), averages for operating blocks may be determined. An operating block is a period of time that is equal to the time from the beginning to end of batch process operations within a process.

(5) Periodic verification. For a control device with total inlet HAP emissions less than 1 tpy, an operating limit(s) must be established for the parameter(s) that will be measured and recorded at least once per averaging period (i.e., daily or block), to verify that the control device is operating properly. The permittee may elect to measure the same parameter(s) that is required for control devices that control inlet HAP emissions equal to or greater than 1 tpy. If the parameter will not be measured continuously, the permittee must request approval of the proposed procedure in the precompliance report. The operating limit(s) and the measurement frequency must be identified, and rationale must be provided to support how these measurements demonstrate the control device is operating properly.

(6) Outlet concentration correction for supplemental gases. If a control device other than a combustion device is used to comply with a TOC, organic HAP, or hydrogen halide and halogen HAP outlet concentration emission limit for batch process vents, the actual concentration for supplemental gases shall be corrected using Equation 1 of this section; process knowledge and representative operating data may be used to determine the fraction of the total flow due to supplemental gas.

(Eq.1) $Ca = Cm \{(Qs + Qa)/(Qa)\}$

Where:

Ca = corrected outlet TOC, organic HAP, or hydrogen halide and halogen HAP concentration, dry basis, ppmv;
Cm = actual TOC, organic HAP, or hydrogen halide and halogen HAP concentration measured at control device outlet, dry basis, ppmv;
Qa = total volumetric flowrate of all gas streams vented to the control device, except supplemental gases;
Qs = total volumetric flowrate of supplemental gases.

(7) If flow to a control device could be intermittent, a flow indicator shall be installed, calibrated, and operated at the inlet or outlet of the control device to identify periods of no flow. Periods of no flow may not be used in daily or block averages, and it may not be used in fulfilling a minimum data availability requirement.

A. State and Federally Enforceable Section (continued)

11. Requirements for process vents that emit hydrogen halide and halogen HAP or PM HAP [63.2465]

(a) Process vents that emit hydrogen halide and halogen HAP or PM HAP shall meet each emission limit that applies in Table 3 to this subpart, and shall also meet each applicable requirement in paragraphs (b) through (d) of this section, as follows:

(b) If any process vents within a process emit hydrogen halide and halogen HAP, the uncontrolled hydrogen halide and halogen HAP emissions shall be determined and summed from each of the process vents within the process using the procedures specified in 63.1257(d)(2)(i) and (ii).

(c) If collective uncontrolled hydrogen halide and halogen HAP emissions from the process vents within a process are greater than or equal to 1,000 pounds per year (lb/yr), compliance shall be demonstrated with 63.994 and the requirements referenced therein, except as specified in paragraphs (c)(1) through (3) of this section, as follows:

(1) When 63.994(b)(1) requires a performance test, the permittee may elect to conduct a design evaluation in accordance with 63.1257(a)(1).

(2) When 63.994(b)(1) refers to "a combustion device followed by a halogen scrubber or other halogen reduction device," it means any combination of control devices used to meet the emission limits specified in Table 3 to this subpart.

(3) Section 63.994(b)(2) does not apply for the purposes of this section.

(d) In order to demonstrate compliance with the PM HAP emission limit for new sources in Table 3 to this subpart, compliance shall be demonstrated with paragraphs (d)(1) and (2) of this section, as follows:

(1) Use Method 5 of appendix A of 40 CFR part 60 to determine the concentration of PM HAP at the inlet and outlet of a control device.

(2) Comply with the monitoring requirements specified in 63.1366(b)(1)(xi) for each fabric filter used to control PM HAP emissions.

A. State and Federally Enforceable Section (continued)

12. Requirements for storage tanks [63.2470]

(a) Storage tanks shall meet each emission limit that applies in Table 4 to this subpart, and shall also meet each applicable requirement specified in paragraphs (b) through (e) of this section, as follows:

(b) If organic HAP emissions are reduced by venting emissions to a fuel gas system or process, compliance shall be demonstrated with the requirements of 63.982(d).

(c) Exceptions to subparts SS and WW of this part 63.

(1) If a performance test or design evaluation is conducted for a control device used to control emissions only from storage tanks, operating limits must be established, monitoring must be conducted, and records must be kept using the same procedures as required in subpart SS of this part 63 for control devices used to reduce emissions from process vents, instead of the procedures specified in 63.985(c), 63.998(d)(2)(i), and 63.999(b)(2).

(2) When the term "storage vessel" is used in subparts SS and WW of this part 63, the term "storage tank," as defined in 63.2550 applies for the purposes of this subpart.

(d) Planned routine maintenance. The emission limits in Table 4 to this subpart for control devices used to control emissions from storage tanks do not apply during periods of planned routine maintenance. Periods of planned routine maintenance of each control device, during which the control device does not meet the emission limit specified in Table 4 to this subpart, must not exceed 240 hrs/yr. The permittee may submit an application to the Administrator requesting an extension of this time limit to a total of 360 hrs/yr. The application must explain why the extension is needed, it must indicate that no material will be added to the storage tank between the time the 240-hr limit is exceeded and the control device is again operational, and it must be submitted at least 60 days before the 240-hr limit will be exceeded.

(e) Vapor balancing alternative. As an alternative to the emission limits specified in Table 4 to this subpart, the permittee may elect to implement vapor balancing in accordance with 63.1253(f), except as specified in paragraphs (e)(1) through (3) of this section, as follows:

(1) When 63.1253(f)(6)(i) refers to a 90 percent reduction, 95 percent applies for the purposes of this subpart.

(2) To comply with 63.1253(f)(6)(i), the owner or operator of an offsite cleaning and reloading facility shall comply with 63.2445 through 63.2550 instead of complying with 63.1253(f)(7)(ii).

(3) The permittee may elect to set a pressure relief device to a value less than the 2.5 pounds per square inch gage pressure (psig) required in 63.1253(f)(5), if the rationale is provided in the notification of compliance status report explaining why the alternative value is sufficient to prevent breathing losses at all times.

13. Requirements for transfer racks [63.2475]

(a) Transfer racks shall meet each emission limit and work practice standard that applies in Table 5 to this subpart, and shall also meet each applicable requirement in paragraphs (b) and (c) of this section, as follows:

(b) When the term "high throughput transfer rack" is used in subpart SS of this part 63, the term "Group 1 transfer rack," as defined in 63.2550, applies for the purposes of this subpart.

(c) If organic HAP emissions are reduced by venting emissions to a fuel gas system or process, compliance shall be demonstrated with the requirements of 63.982(d).

A. State and Federally Enforceable Section (continued)

14. Requirements for equipment leaks [63.2480]

(a) Equipment leaks shall meet each requirement that applies in Table 6 to this subpart, except as specified in paragraphs (b) and (c) of this section, as follows:

(b) The requirements for pressure testing in 63.1036(b) may be applied to all processes, not just batch processes.

(c) For the purposes of this subpart, pressure testing for leaks in accordance with 63.1036(b) is not required after reconfiguration of an equipment train if flexible hose connections are the only disturbed equipment.

15. Requirements for wastewater streams and liquid streams in open systems within an MCPU [63.2485]

(a) Wastewater streams and liquid streams in open systems within an MCPU shall meet each requirement that applies in Table 7 to this subpart, except as specified in paragraphs (b) through (l) of this section, as follows:

(b) Wastewater HAP. Where 63.105 and 63.132 through 63.148 refer to compounds in Table 9 of subpart G of this part 63, the compounds in Tables 8 and 9 to this subpart apply for the purposes of this subpart.

(c) Group 1 wastewater. Section 63.132(c)(1)(i) and (ii) do not apply. For the purposes of this subpart, a process wastewater stream is Group 1 for compounds in Tables 8 and 9 to this subpart if any of the conditions specified in paragraphs (c)(1) through (3) of this section are met, as follows:

(1) The total annual average concentration of compounds in Table 8 to this subpart is greater than 50 ppmw, and the combined total annual average concentration of compounds in Tables 8 and 9 to this subpart is greater than or equal to 10,000 ppmw at any flowrate.

(2) The total annual average concentration of compounds Table 8 to this subpart is greater 50 ppmw, the combined total annual average concentration of compounds in Tables 8 and 9 to this subpart is greater than or equal to 1,000 ppmw, and the annual average flowrate is greater than or equal to 1 l/min.

(3) The total annual average concentration of compounds in Table 8 to this subpart is less than or equal to 50 ppmw, the total annual average concentration of compounds in Table 9 to this subpart is greater than or equal to 30,000 ppmw at an existing source or greater than or equal to 4,500 ppmw at a new source, and the total annual load of compounds in Table 9 to this subpart is greater than or equal to 1 tpy.

A. State and Federally Enforceable Section (continued)

(d) Wastewater tank requirements.

(1) When 63.133 and 63.147 reference floating roof requirements in 63.119 and 63.120, the corresponding requirements in subpart WW of this part 63 may be applied for the purposes of this subpart.

(2) When 63.133 refers to Table 9 of subpart G of this part 63, the maximum true vapor pressure in the table shall be limited to the HAP listed in Tables 8 and 9 to this subpart.

(3) For the purposes of this subpart, the requirements of 63.133(a)(2) are satisfied by operating and maintaining a fixed roof if it is demonstrated that the total soluble and partially soluble HAP emissions from the wastewater tank are no more than 5 percent higher than the emissions would be if the contents of the wastewater tank were not heated, treated by an exothermic reaction, or sparged.

(4) The emission limits specified in 63.133(b)(2) and 63.139 for control devices used to control emissions from wastewater tanks do not apply during periods of planned routine maintenance of the control device(s) of no more than 240 hrs/yr. The permittee may request an extension to a total of 360 hrs/yr in accordance with the procedures specified in 63.2470(d).

(e) Individual drain systems. The provisions of 63.136(e)(3) apply to individual drainage systems, except as specified in paragraph (e)(1) of this section, as follows:

(1) A sewer line connected to drains that are in compliance with 63.136(e)(1) may be vented to the atmosphere, provided that the sewer line entrance to the first downstream junction box is water sealed and the sewer line vent pipe is designed as specified in 63.136(e)(2)(ii)(A).

(2) [Reserved]

(f) Closed-vent system requirements. When 63.148(k) refers to closed vent systems that are subject to the requirements of 63.172, the requirements of either 63.172 or 63.1034 apply for the purposes of this subpart.

(g) Halogenated vent stream requirements. For each halogenated vent stream from a Group 1 wastewater stream or residual removed from a Group 1 wastewater stream that is vented through a closed-vent system to a combustion device to reduce organic HAP emissions, the same emission limits shall be met as specified for batch process vents in item 2 of Table 2 to this subpart.

(h) Alternative test methods.

(1) Method 8260 or 8270 as specified in 63.1257(b)(10)(iii) may be used as an alternative to the test methods specified in 63.144(b)(5)(i).

(2) A wastewater analyses may be conducted using Method 1666 or 1671 of 40 CFR part 136 and compliance with the sampling protocol requirements specified in 63.144(b)(5)(ii) may be used as an alternative to using the methods specified in 63.144(b)(5)(i). The validation requirements specified in 63.144(b)(5)(iii) do not apply if you use Method 1666 or 1671 of 40 CFR part 136.

(3) Method 25A of 40 CFR part 60 as specified in 63.997 may be used as an alternative to using Method 18 of 40 CFR part 60, as specified in 63.139(c)(1)(ii) and 63.145(i)(2).

(i) Offsite management and treatment option.

(1) If wastewater is shipped to an offsite treatment facility that meets the requirements of 63.138(h), the permittee may elect to document in the notification of compliance status report that the wastewater will be treated as hazardous waste at a facility that meets the requirements of 63.138(h), as an alternative to having the offsite facility submit the certification specified in 63.132(g)(2).

A. State and Federally Enforceable Section (continued)

(2) As an alternative to the management and treatment options specified in 63.132(g)(2), any affected wastewater stream (or residual removed from an affected wastewater stream) with a total annual average concentration of compounds in Table 8 to this subpart less than 50 ppmw may be transferred offsite in accordance with paragraphs (i)(2)(i) and (ii) of this section, as follows:

(i) The transferee (or permittee) must demonstrate that less than 5 percent of the HAP in Table 9 to this subpart is emitted from the waste management units up to the activated sludge unit.

(ii) The transferee must treat the wastewater stream or residual in a biological treatment unit in accordance with 63.138 and 63.145 and the requirements referenced therein.

(j) The annual average concentration and annual average flowrate for wastewater streams shall be determined for each MCPU. The procedures for flexible operation units specified in 63.144(b) and (c) do not apply for the purposes of this subpart.

(k) The requirement to correct outlet concentrations from combustion devices to 3 percent oxygen in 63.139(c)(1)(ii) and 63.146(i)(6) applies only if supplemental gases are combined with a vent stream from a Group 1 wastewater stream. If emissions are controlled with a vapor recovery system as specified in 63.139(c)(2), correction for supplemental gases shall be determined as specified in 63.2460(c)(6).

(l) Requirements for liquid streams in open systems.

(1) References in 63.149 to 63.100(b) mean 63.2435(b) for the purposes of this subpart.

(2) When ?63.149(e) refers to 40 CFR 63.100(l)(1) or (2), 63.2445(a) applies for the purposes of this subpart.

(3) When 63.149 uses the term "chemical manufacturing process unit," the term "MCPU" applies for the purposes of this subpart.

(4) When 63.149(e)(1) refers to characteristics of water that contain compounds in Table 9 to 40 CFR part 63, subpart G, the characteristics specified in paragraphs (c)(1) through (3) of this section apply for the purposes of this subpart.

(5) When 63.149(e)(2) refers to characteristics of water that contain compounds in Table 9 to 40 CFR part 63, subpart G, the characteristics specified in paragraph (c)(2) of this section apply for the purposes of this subpart.

16. Requirements for heat exchange systems [63.2490]

(a) Heat exchange systems shall comply with each requirement that applies in Table 10 to this subpart, except as specified in paragraphs (b) and (c) of this section, as follows:

(b) The phrase "a chemical manufacturing process unit meeting the conditions of 63.100(b)(1) through (b)(3) of this section" in 63.104(a) means "an MCPU meeting the conditions of 63.2435" for the purposes of this subpart.

(c) The reference to 63.100(c) in 63.104(a) does not apply for the purposes of this subpart.

A. State and Federally Enforceable Section (continued)

17. Alternative Means of Compliance 63.2495 & 63.2500

Requirements for compliance with the pollution prevention standard [63.2495]

(a) The permittee may elect to comply with the pollution prevention alternative requirements specified in paragraphs (a)(1) and (2) of this section in lieu of the emission limitations and work practice standards contained in Tables 1 through 7 to this subpart for any MCPU for which initial startup occurred before April 4, 2002.

(1) The permittee shall reduce the production-indexed HAP consumption factor (HAP factor) by at least 65 percent from a 3-year average baseline beginning no earlier than the 1994 through 1996 calendar years. For any reduction in the HAP factor achieved by reducing HAP that are also volatile organic compounds (VOC), an equivalent reduction shall be demonstrated in the production-indexed VOC consumption factor (VOC factor) on a mass basis. The VOC factor may not be increased for any reduction in the HAP factor achieved by reducing a HAP that is not a VOC.

(2) Any MCPU for which compliance is demonstrated by using the pollution prevention alternative shall begin with the same starting material(s) and end with the same product(s). Compliance shall not be demonstrated by eliminating any steps of a process by transferring the step offsite (to another manufacturing location). A solvent recovery step conducted offsite to onsite may not be merged as part of an existing process as a method of reducing consumption.

(3) The permittee may comply with the requirements of paragraph (a)(1) of this section for a series of processes, including situations where multiple processes are merged, if it is demonstrated to the satisfaction of the Administrator that the multiple processes were merged after the baseline period into an existing process or processes.

(b) Exclusions.

(1) All HAP that are generated in the MCPU and that are not included in consumption, as defined in 63.2550, shall comply with the emission limitations and work practice standards contained in Tables 1 through 7 to this subpart. Hydrogen halides that are generated as a result of combustion control shall be controlled according to the requirements of 63.994.

(2) Nondedicated formulation or nondedicated solvent recovery processes may not be merged with any other processes.

(c) Initial compliance procedures. To demonstrate initial compliance with paragraph (a) of this section, a demonstration summary shall be prepared in accordance with paragraph (c)(1) of this section and baseline and target annual HAP and VOC factors shall be calculated in accordance with paragraphs (c)(2) and (3) of this section.

(1) Demonstration plan. A pollution prevention demonstration plan must be prepared that contains, at a minimum, the following information in paragraphs (c)(1)(i) through (iii) of this section, for the compliance demonstration of each MCPU with paragraph (a) of this section.

(i) descriptions of the methodologies and forms used to measure and record consumption of HAP and VOC compounds;

(ii) descriptions of the methodologies and forms used to measure and record production of the product(s);

(iii) supporting documentation for the descriptions provided in accordance with paragraphs (c)(1)(i) and (ii) of this section including, but not limited to samples of operator log sheets and daily, monthly, and/or annual inventories of materials and products, and a description of how this documentation will be used to calculate the annual factors required in paragraph (d) of this section.

A. State and Federally Enforceable Section (continued)

(2) Baseline factors. Baseline HAP and VOC factors shall be calculated by dividing the consumption of total HAP and total VOC by the production rate, per process, for the first 3-year period in which the process was operational, beginning no earlier than the period consisting of the 1994 through 1996 calendar years.

(3) Target annual factors. The permittee shall calculate target annual HAP and VOC factors. The target annual HAP factor shall be equal to 35 percent of the baseline HAP factor. The target annual VOC factor shall be lower than the baseline VOC factor by an amount equivalent to the reduction in any HAP that is also a VOC, on a mass basis. The target annual VOC factor may be the same as the baseline VOC factor if the only HAP reduced is not a VOC.

(d) Continuous compliance requirements. The permittee shall calculate annual rolling average values of the HAP and VOC factors (annual factors) in accordance with the procedures specified in paragraphs (d)(1) through (3) of this section. To show continuous compliance, the annual factors shall be equal to or less than the target annual factors calculated according to paragraph (c)(3) of this section.

(1) The annual factors shall be calculated by dividing the consumption of both total HAP and total VOC by the production rate, per process, for 12-month periods, at the frequency specified in either paragraph (d)(2) or (3) of this section, as applicable.

(2) For continuous processes, the annual factors shall be calculated every 30 days for the 12-month period preceding the 30th day (i.e., annual rolling average calculated every 30 days). A process with both batch and continuous operations is considered a continuous process for the purposes of this section.

(3) For batch processes, the annual factors shall be calculated every 10 batches for the 12-month period preceding the 10th batch (i.e., annual rolling average calculated every 10 batches), except as specified in paragraphs (d)(3)(i) and (ii) of this section.

(i) If more than 10 batches are produced during a month, the annual factors shall be calculated at least once during that month.

(ii) If less than 10 batches are produced in a 12-month period, the annual factors shall be calculated for the number of batches in the 12-month period since the previous calculations.

(e) Records. The permittee shall keep records of HAP and VOC consumption, production, and the rolling annual HAP and VOC factors for each MCPU for which compliance with paragraph (a) of this section is demonstrated.

(f) Reporting.

(1) The pollution prevention demonstration plan shall be included in the precompliance report required by 63.2520(c).

(2) The compliance report shall identify all days during which the annual factors were above the target factors.

A. State and Federally Enforceable Section (continued)

18. Compliance through emissions averaging [63.2500]

(a) For the existing emission units, the permittee may elect to comply with the percent reduction emission limitations in Tables 1, 2, 4, 5, and 7 to this subpart by complying with the emissions averaging provisions specified in 63.150, except as specified in paragraphs (b) through (f) of this section, as follows.

(b) The batch process vents in an MCPU collectively are considered one individual emission point for the purposes of emissions averaging, except that only individual batch process vents must be excluded to meet the requirements of 63.150(d)(5).

(c) References in 63.150 to 63.112 through 63.130 mean the corresponding requirements in 63.2450 through 63.2490, including applicable monitoring, recordkeeping, and reporting.

(d) References to "periodic reports" in 63.150 mean "compliance report" for the purposes of this subpart.

(e) For batch process vents, uncontrolled emissions shall be estimated for a standard batch using the procedures in 63.1257(d)(2)(i) and (ii) instead of the procedures in 63.150(g)(2). The calculated emissions per batch shall be multiplied by the number of batches per month when calculating the monthly emissions for use in calculating debits and credits.

(f) References to "storage vessels" in 63.150 mean "storage tank" as defined in 63.2550 for the purposes of this subpart.

19. Compliance with the alternative standard [?63.2505]

As an alternative to complying with the emission limits and work practice standards for process vents and storage tanks in Tables 1 through 4 to this subpart and the requirements in 63.2455 through 63.2470, the permittee may comply with the emission limits in paragraph (a) of this section and demonstrate compliance in accordance with the requirements in paragraph (b) of this section.

(a) Emission limits and work practice standards.

(1) The permittee shall route vent streams through a closed-vent system to a control device that reduces HAP emissions as specified in either paragraph (a)(1)(i) or (ii) of this section, as follows:

(i) If a combustion control device is used, it shall reduce HAP emissions as specified in paragraphs (a)(1)(i)(A), (B), and (C) of this section, as follows:

(A) to an outlet TOC concentration of 20 parts per million by volume (ppmv) or less;
(B) to an outlet concentration of hydrogen halide and halogen HAP of 20 ppmv or less; and
(C) as an alternative to paragraph (a)(1)(i)(B) of this section, if the halogenated vent stream(s) emitted from a combustion device are followed by a scrubber, reduce the hydrogen halide and halogen HAP generated in the combustion device by greater than or equal to 95 percent by weight in the scrubber.

(ii) If a noncombustion control device(s) is used, it shall reduce HAP emissions to an outlet total organic HAP concentration of 50 ppmv or less, and an outlet concentration of hydrogen halide and halogen HAP of 50 ppmv or less.

(2) Any Group 1 process vents within a process that are not controlled according to this alternative standard shall be controlled according to the emission limits in Tables 1 through 3 to this subpart.

A. State and Federally Enforceable Section (continued)

(b) Compliance requirements. In order to demonstrate compliance with paragraph (a) of this section, the permittee shall meet the requirements of 63.1258(b)(5)(i) beginning no later than the initial compliance date specified in 63.2445, except as specified in paragraphs (b)(1) through (7) of this section, as follows:

(1) The permittee shall comply with the requirements in 63.983 and the requirements referenced therein for closed-vent systems.

(2) When 63.1258(b)(5)(i) refers to 63.1253(d) and 63.1254(c), the requirements in paragraph (a) of this section apply for the purposes of this subpart.

(3) The permittee shall submit the results of any determination of the target analytes or predominant HAP in the notification of compliance status report.

(4) When 63.1258(b)(5)(i)(B) refers to "HCl," it means "total hydrogen halide and halogen HAP" for the purposes of this subpart.

(5) If electing to comply with the requirement to reduce hydrogen halide and halogen HAP by greater than or equal to 95 percent by weight in paragraph (a)(1)(i)(C) of this section, the permittee shall meet the requirements in paragraphs (b)(5)(i) and (ii) of this section, as follows:
.
(i) demonstrate initial compliance with the 95 percent reduction by conducting a performance test and setting a site-specific operating limit(s) for the scrubber in accordance with 63.994 and the requirements referenced therein. The results of the initial compliance demonstration shall be submitted in the notification of compliance status report; and

(ii) install, operate, and maintain CPMS for the scrubber as specified in 63.2450(k), instead of as specified in 63.1258(b)(5)(i)(C).

(6) If flow to the scrubber could be intermittent, the permittee shall install, calibrate, and operate a flow indicator as specified in 63.2460(c)(7).

(7) The operating day shall be used as the averaging period for CEMS data and scrubber parameter monitoring data.

A. State and Federally Enforceable Section (continued)

20. III. Monitoring and Recordkeeping Requirements

Recordkeeping Requirements [63.2525]

The permittee shall keep and maintain the records specified in paragraphs (a) through (k) of this section, as follows:

(a) each applicable record required by subpart A of this part 63 and in referenced subparts F, G, SS, UU, WW, and GGG of this part 63;

(b) records of each operating scenario as specified in paragraphs (b)(1) through (8) of this section, as follows:

(1) a description of the process and the type of process equipment used;

(2) an identification of related process vents, including their associated emissions episodes if not complying with the alternative standard in 63.2505; wastewater point of determination (POD); storage tanks; and transfer racks;

(3) the applicable control requirements of this subpart, including the level of required control, and the level of control for each process vent subject to this subpart;

(4) the control device or treatment process used, as applicable, including a description of operating and/or testing conditions for each associated control device;

(5) the process vents, wastewater POD, transfer racks, and storage tanks (including those from other processes) that are simultaneously routed to the control device or treatment process(s);

(6) the applicable monitoring requirements of this subpart and any parametric levels maintained that assures compliance for all emissions routed to the control device or treatment process;

(7) calculations and engineering analyses required to demonstrate compliance; and

(8) a change to any of these elements not previously reported, except for paragraph (b)(5) of this section, constitutes a new operating scenario;

A. State and Federally Enforceable Section (continued)

(c) a schedule or log of operating scenarios updated each time a different operating scenario is put into operation;

(d) the information specified in paragraphs (d)(1) and (2) of this section for Group 1 batch process vents in compliance with a percent reduction emission limit in Table 2 to this subpart if some of the vents are controlled to less than the percent reduction requirement, as follows:

(1) records of whether each batch operated was considered a standard batch; and

(2) the estimated uncontrolled and controlled emissions for each batch that is considered to be a nonstandard batch;

(e) the information specified in the following paragraphs (e)(1) through (4) of this section for each process with Group 2 batch process vents or uncontrolled hydrogen halide and halogen HAP emissions, from the sum of all batch and continuous process vents less than 1,000 lb/yr. No record is required if you documented in the notification of compliance status report that the MCPU does not process, use, or produce HAP.

(1) a record of the day each batch was completed;

(2) a record of whether each batch operated was considered a standard batch;

(3) the estimated uncontrolled and controlled emissions for each batch that is considered to be a nonstandard batch; and

(4) records of the daily 365-day rolling summations of emissions, or alternative records that correlate to the emissions (e.g., number of batches), calculated no less frequently than monthly.

(f) a record of each time a safety device is opened to avoid unsafe conditions in accordance with 63.2450(s);

(g) records of the results of each CPMS calibration check and the maintenance performed, as specified in 63.2450(k)(1);

A. State and Federally Enforceable Section (continued)

(h) for each CEMS, the records of the date and time that each deviation started and stopped, and whether the deviation occurred during a period of startup, shutdown, or malfunction or during another period;

(i) for each PUG, records specified in paragraphs (i)(1) through (5) of this section, as follows:

(1) descriptions of the MCPU and other process units in the initial PUG required by 63.2535(l)(1)(v);

(2) rationale for including each MCPU and other process unit in the initial PUG (i.e., identify the overlapping equipment between process units) required by 63.2535(l)(1)(v);

(3) calculations used to determine the primary product for the initial PUG required by 63.2535(l)(2)(iv);

(4) descriptions of process units added to the PUG after the creation date and rationale for including the additional process units in the PUG as required by 63.2535(l)(1)(v); and

(5) the calculation of each primary product redetermination required by 63.2535(l)(2)(iv);

(j) Group 2 emission points, where the emission points are used in an emissions average; Per the SSMP required by 63.6(e)(3), Group 2 emission points are not required to be included, unless those emission points are used in an emissions average. For equipment leaks, the SSMP requirement is limited to control devices and is optional for other equipment; and

(k) for each bag leak detector used to monitor PM HAP emissions from a fabric filter, records of any bag leak detection alarm, including the date and time, with a brief explanation of the cause of the alarm and the corrective action taken.

21. IV. Reporting Requirements

Notification requirements [63.2515]

(a) The permittee shall submit all of the notifications in 63.6(h)(4) and (5), 63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that apply and by the dates as specified by rule.

(b) Initial notification.

(1) As specified in 63.9(b)(2) for an existing source, if startup of the affected source is before November 10, 2003, the permittee shall submit an initial notification not later than 120 calendar days after November 10, 2003.

(2) As specified in 63.9(b)(3), if startup of the new affected source is on or after November 10, 2003, the permittee shall submit an initial notification not later than 120 calendar days after becoming subject to this subpart.

(c) Notification of performance test. When required to conduct a performance test the permittee shall submit a notification of intent to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin as required in 63.7(b)(1). For any performance test required as part of the initial compliance procedures for batch process vents in Table 2 to this subpart, the permittee shall also submit the test plan required by 63.7(c) and the emission profile with the notification of the performance test.

(d) Each report shall be submitted as required to the Ohio EPA Central District Office.

A. State and Federally Enforceable Section (continued)

22. Reporting requirements [63.2520]

(a) The permittee shall submit each applicable report required in Table 11 to this subpart.

(b) Unless the Administrator has approved a different schedule for submission of reports under 63.10(a), the permittee shall submit each report by the date in Table 11 to this subpart and according to paragraphs (b)(1) through (5) of this section, as follows:

(1) The first compliance report shall cover the period beginning on the compliance date that is specified for the affected source in 63.2445 and ending on June 30 or December 31, whichever date is the first date following the end of the first 6 months after the compliance date that is specified for the affected source in 63.2445.

(2) The first compliance report shall be postmarked or delivered no later than August 31 or February 28, whichever date is the first date following the end of the first reporting period specified in paragraph (b)(1) of this section.

(3) Each subsequent compliance report shall cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31
.
(4) Each subsequent compliance report shall be postmarked or delivered no later than August 31 or February 28, whichever date is the first date following the end of the semiannual reporting period.

(5) For each affected source that is subject to permitting regulations pursuant to 40 CFR part 70 or 40 CFR part 71, and if the permitting authority has established dates for submitting semiannual reports pursuant to 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), the permittee may submit the first and subsequent compliance reports according to the dates the permitting authority has established instead of according to the dates in paragraphs (b)(1) through (4) of this section.

(c) Precompliance report. The permittee shall submit a precompliance report to request approval for any of the items in the following paragraphs (c)(1) through (7) of this section. The Ohio EPA shall either approve or disapprove the precompliance report within 90 days after receiving it. If the precompliance report is disapproved by the regulating agency, the permittee shall still be subject to and shall achieve compliance with the emission limitations and work practice standards contained in this subpart by the compliance date. The permittee shall notify the appropriate Ohio EPA District Office or local air agency 60 days before any planned change is to be implemented to the information submitted in the precompliance report. A precompliance report shall be submitted to request approval for the following items:

(1) requests for approval to set operating limits for parameters other than those specified in 63.2455 through 63.2485 and referenced therein. Alternatively, the permittee may make these requests according to 63.8(f);

(2) descriptions of daily or per batch demonstrations to verify that control devices subject to 63.2460(c)(5) are operating as designed;

(3) a description of the test conditions, data, calculations, and other information used to establish operating limits according to 63.2460(c)(3);

(4) data and rationale used to support an engineering assessment to calculate uncontrolled emissions in accordance with 63.1257(d)(2)(ii);

(5) if complying with the pollution prevention alternative, the pollution prevention demonstration plan required in 63.2495(c)(1);

A. State and Federally Enforceable Section (continued)

(6) documentation of the practices that will be implemented to minimize HAP emissions from streams that contain energetics and organic peroxides, and if applicable, the rationale for why meeting the emission limit specified in Tables 1 through 7 to this subpart would create an undue safety hazard; and

(7) for fabric filters that are monitored with bag leak detectors, an operation and maintenance plan that describes proper operation and maintenance procedures, and a corrective action plan that describes corrective actions to be taken, and the timing of those actions, when the PM concentration exceeds the set point and activates the alarm.

(d) Notification of compliance status report. The permittee shall submit a notification of compliance status report according to the schedule in paragraph (d)(1) of this section, and the notification of compliance status report shall contain the information specified in paragraph (d)(2) of this section, as follows:

(1) the notification of compliance status report shall be submitted no later than 150 days after the applicable compliance date specified in 63.2445.

(2) The notification of compliance status report shall include the information in paragraphs (d)(2)(i) through (ix) of this section, as follows:

(i) the results of any applicability determinations, emission calculations, or analyses used to identify and quantify HAP emissions from the affected source;

(ii) the results of emissions profiles, performance tests, engineering analyses, design evaluations, flare compliance assessments, inspections and repairs, and calculations used to demonstrate initial compliance according to 63.2455 through 63.2485. Performance tests results shall include descriptions of sampling and analysis procedures and quality assurance procedures;

(iii) descriptions of monitoring devices, monitoring frequencies, and the operating limits established during the initial compliance demonstrations, including data and calculations to support the levels established;

(iv) all operating scenarios;

(v) descriptions of worst-case operating and/or testing conditions for the control device(s);

(vi) identification of parts of the affected source subject to overlapping requirements described in 63.2535 and the authority under which compliance shall be demonstrated;

(vii) the information specified in 63.1039(a)(1) through (3) for each process subject to the work practice standards for equipment leaks in Table 6 to this subpart;

(viii) identification of the storage tanks for which the vapor balancing alternative in 63.2470(g) is being used to demonstrate compliance; and

(ix) records as specified in 63.2535(i)(1) through (3) of process units used to create a develop process unit groups (PUG), as described in section 63.2435(e) and calculations of the initial primary product of the PUG.

(e) Compliance report. The compliance report shall contain the information specified in paragraphs (e)(1) through (10) of this section, as follows:

(1) company name and address;

(2) statement by a responsible official with that official's name, title, and signature, certifying the accuracy of the content of the report;

(3) date of report and beginning and ending dates of the reporting period;

A. State and Federally Enforceable Section (continued)

(4) for each startup, shutdown, and malfunction (SSM) event during which excess emissions occur, a statement that the procedures specified in the startup, shutdown, and malfunction plan (SSMP) were followed, or documentation of the actions taken that were not consistent with the SSMP, including a brief description of each malfunction;

(5) The compliance report shall contain the information on deviations, as defined in 63.2550, according to paragraphs (e)(5)(i), (ii), and (iii) of this section, as follows:

(i) if there are no deviations from any emission limit, operating limit, or work practice standard specified in this subpart, a statement that there were no deviations from the emission limits, operating limits, or work practice standards during the reporting period;

(ii) for each deviation from an emission limit, operating limit, and/or work practice standard, including periods of SSM, that occurs at an affected source not monitored using a continuous monitoring system (CMS) to demonstrate compliance with the emission limit or work practice standard in this subpart, the information in paragraphs (e)(5)(ii)(A) through (C) of this section, as follows:

(A) the total operating time of the affected source during the reporting period;

(B) information on the number, duration, and cause of deviations (including unknown cause, if applicable), as applicable, and the corrective action taken; and

(C) operating logs for the day(s) during which the deviation occurred, except operating logs are not required for deviations of the work practice standards for equipment leaks.

(iii) For each deviation from an emission limit or operating limit occurring, including periods of SSM, at an affected source where a CMS is used to comply with an emission limit in this subpart, the information in paragraphs (e)(5)(iii)(A) through (L) of this section, as follows:

(A) the date and time that each CMS was inoperative, except for zero (low-level) and high-level checks;

(B) the date, time, and duration that each CEMS was out-of-control, including the information in 63.8(c)(8);

(C) the date and time that each deviation started and stopped, and whether each deviation occurred during a period of startup, shutdown, or malfunction or during another period;

(D) a summary of the total duration of the deviation during the reporting period, and the total duration as a percent of the total operating time of the affected source during that reporting period;

(E) a breakdown of the total duration of the deviations during the reporting period into those that are due to startup, shutdown, control equipment problems, process problems, other known causes, and other unknown causes;

(F) a summary of the total duration of CMS downtime during the reporting period, and the total duration of CMS downtime as a percent of the total operating time of the affected source during that reporting period;

(G) an identification of each HAP that is known to be in the emission stream;

(H) a brief description of the process units;

(I) a brief description of the CMS;

(J) the date of the latest CMS certification or audit;

(K) operating logs for each day(s) during which the deviation occurred; and

A. State and Federally Enforceable Section (continued)

(L) the operating day or operating block average values of monitored parameters for each day(s) during which the deviation occurred.

(6) If a CEMS is employed to demonstrate compliance, and there were no periods during which it was out-of-control as specified in 63.8(c)(7), a statement shall be included that documents that there were no periods during which the CEMS was out-of-control during the reporting period.

(7) each new operating scenario which has been implemented since the time period covered by the last compliance report and has not been submitted in the notification of compliance status report or a previous compliance report. For each new operating scenario, verification shall be provided to document that the operating conditions for any associated control or treatment device have not been exceeded, and that any required calculations and engineering analyses have been performed. For the purposes of this paragraph, a revised operating scenario for an existing process is considered to be a new operating scenario;

(8) records of process units added to a PUG as specified in 63.2525(i)(4) and records of primary product redeterminations as specified in 63.2525(i)(5);

(9) applicable records and information for periodic reports as specified in referenced subparts F, G, SS, UU, WW, and GGG of this part;

(10) Notification of process change.

(i) Except as specified in paragraph (e)(10)(ii) of this section, whenever a process change is made, or a change in any of the information submitted in the notification of compliance status report, that is not within the scope of an existing operating scenario, documentation of the change shall be submitted in the compliance report. A process change does not include moving within a range of conditions identified in the standard batch. The notification shall include all of the information in paragraphs (e)(10)(i)(A) through (C) of this section, as follows:

(A) a description of the process change;

(B) revisions to any of the information reported in the original notification of compliance status report under paragraph (d) of this section; and

(C) information required by the notification of compliance status report under paragraph (d) of this section for changes involving the addition of processes or equipment at the affected source.

(ii) A report shall be submitted to the appropriate Ohio EPA District Office or local air agency within 60 days before the scheduled implementation date of any of the changes identified in paragraph (e)(10)(ii)(A), (B), or (C) of this section, as follows:

(A) any change to the information contained in the precompliance report;

(B) a change in the status of a control device from small to large; and

(C) a change from Group 2 to Group 1 for any emission point.

A. State and Federally Enforceable Section (continued)

23. V. Testing Requirements

Testing Requirements [63.2450(g), (h), and (i) & 63.1257(a)]

(a) Requirements for performance tests. The requirements specified in paragraphs (a)(1) through (5) of this section apply instead of or in addition to the requirements specified in subpart SS of this part 63.

(1) gas molecular weight analysis shall be conducted using Method 3, 3A, or 3B in appendix A to part 60 of this chapter;

(2) moisture content of the stack gas shall be measured using Method 4 in appendix A to part 60 of this chapter;

(3) if the uncontrolled or inlet gas stream to the control device contains carbon disulfide, emissions testing shall be conducted according to paragraph (a)(3)(i) or (ii) of this section, as follows:

(i) If complying with the percent reduction emission limits in Tables 1 through 7 to this subpart, and carbon disulfide is the principal organic HAP component (i.e., greater than 50 percent of the HAP in the stream by volume), then Method 18 or Method 15 (40 CFR part 60, appendix A) shall be used to measure carbon disulfide at the inlet and outlet of the control device. The percent reduction in carbon disulfide shall be used as a surrogate for the percent reduction in total organic HAP emissions.

(ii) If complying with the outlet total organic compound (TOC) concentration emission limits in Tables 1 through 7 to this subpart, and the uncontrolled or inlet gas stream to the control device contains greater than 10 percent (volume concentration) carbon disulfide, Method 18 or Method 15 shall be used to separately determine the carbon disulfide concentration. The total HAP or TOC emissions shall be calculated by totaling the carbon disulfide emissions measured using Method 18 or Method 15 and the other HAP emissions measured using Method 18 or 25A.

(4) Method 320 of 40 CFR part 60, appendix A may be used as an alternative to using Method 18, Method 25/25A, or Method 26/26A of 40 CFR part 60, appendix A, to comply with any of the emission limits specified in Tables 1 through 7 to this subpart. When using Method 320, the analyte spiking procedures of section 13 of Method 320 shall be followed, unless it has been demonstrated that the complete spiking procedure has been conducted at a similar source.

(5) Section 63.997(c)(1) does not apply. For the purposes of this subpart, results of all initial compliance demonstrations shall be included in the notification of compliance status report, which is due 150 days after the compliance date, as specified in 63.2520(d)(1).

(b) Design evaluation. To determine the percent reduction of a small control device, the permittee may elect to conduct a design evaluation as specified in 63.1257(a)(1) instead of a performance test as specified in subpart SS of this part 63. The permittee must establish the value(s) and basis for the operating limits as part of the design evaluation. To demonstrate that a control device meets the required control efficiency, a design evaluation must address the composition and organic HAP concentration of the vent stream entering the control device. A design evaluation also must address other vent stream characteristics and control device operating parameters as specified in 63.1257(a)(1), depending on the type of control device that is used. If the vent stream is not the only inlet to the control device, the efficiency demonstration also must consider all other vapors, gases, and liquids, other than fuels, received by the control device.

(c) Outlet concentration correction for supplemental gases. In 63.997(e)(2)(iii)(C), the correction to 3 percent oxygen for emission streams at the outlet of combustion devices is required if supplemental gases are added, as defined in 63.2550, to the vent stream or manifold.

A. State and Federally Enforceable Section (continued)

24. Definitions that apply to this subpart [63.2550]

(a) For an affected source complying with the requirements in subpart SS of this part 63, the terms used in this subpart and in subpart SS of this part 63 have the meaning given them in 63.981, except as specified in 63.2450(k)(2) and (m), 63.2470(c)(2), 63.2475(b), and paragraph (i) of this section.

(b) For an affected source complying with the requirements in subpart TT of this part 63, the terms used in this subpart and in subpart TT of this part 63 have the meaning given them in 63.1001.

(c) For an affected source complying with the requirements in subpart UU of this part 63, the terms used in this subpart and in subpart UU of this part 63 have the meaning given them in 63.1020.

(d) For an affected source complying with the requirements in subpart WW of this part 63, the terms used in this subpart and subpart WW of this part 63 have the meaning given them in 63.1061, except as specified in 63.2450(m), 63.2470(c)(2), and paragraph (i) of this section.

(e) For an affected source complying with the requirements in 63.132 through 63.149, the terms used in this subpart and 63.132 through 63.149 have the meaning given them in 63.101 and 63.111, except as specified in 63.2450(m) and paragraph (i) of this section.

(f) For an affected source complying with the requirements in 63.104 and 63.105, the terms used in this subpart and in 63.104 and 63.105 of this subpart have the meaning given them in 63.101, except as specified in 63.2450(m), 63.2490(b), and paragraph (i) of this section.

(g) For an affected source complying with requirements in 63.1253, 63.1257, and 63.1258, the terms used in this subpart and in 63.1253, 63.1257, and 63.1258 have the meaning given them in 63.1251, except as specified in 63.2450(m) and paragraph (i) of this section.

(h) For an affected source complying with the requirements in 40 CFR part 65, subpart F, the terms used in this subpart and in 40 CFR part 65, subpart F, have the meaning given them in 40 CFR 65.2.

(i) All other terms used in this subpart are defined in the Clean Air Act (CAA), in 40 CFR 63.2, and in this paragraph (i). If a term is defined in Sections 63.2, 63.101, 63.111, 63.981, 63.1001, 63.1020, 63.1061, 63.1251, or 65.2 and in this paragraph (i), the definition in this paragraph (i) applies for the purposes of this subpart.

Ancillary activities means boilers and incinerators (not used to comply with the emission limits in Tables 1 through 7 to this subpart), chillers and refrigeration systems, and other equipment and activities that are not directly involved (i.e., they operate within a closed system and materials are not combined with process fluids) in the processing of raw materials or the manufacturing of a product or isolated intermediate.

Batch operation means a noncontinuous operation involving intermittent or discontinuous feed into equipment, and, in general, involves the emptying of the equipment after the operation ceases and prior to beginning a new operation. Addition of raw material and withdrawal of product do not occur simultaneously in a batch operation.

A. State and Federally Enforceable Section (continued)

Batch process vent means a vent from a unit operation or vents from multiple unit operations within a process that are manifolded together into a common header, through which a HAP-containing gas stream is, or has the potential to be, released to the atmosphere. Examples of batch process vents include, but are not limited to, vents on condensers used for product recovery, reactors, filters, centrifuges, and process tanks. The following are not batch process vents for the purposes of this subpart:

(1) continuous process vents;
(2) bottoms receivers;
(3) surge control vessels;
(4) gaseous streams routed to a fuel gas system(s);
(5) vents on storage tanks, wastewater emission sources, or pieces of equipment subject to the emission limits and work practice standards in Tables 4, 6, and 7 to this subpart;
(6) drums, pails, and totes;
(7) flexible elephant trunk systems that draw ambient air (i.e., the system is not ducted, piped, or otherwise connected to the unit operations) away from operators when vessels are opened; and
(8) emission streams from emission episodes that are undiluted and uncontrolled containing less than 50 ppmv HAP or less than 200 lb/yr. The HAP concentration or mass emission rate may be determined using any of the following:

(a) process knowledge that no HAP are present in the emission stream;
(b) an engineering assessment as discussed in 63.1257(d)(2)(ii);
(c) equations specified in 63.1257(d)(2)(i), as applicable; test data using Methods 18 of 40 CFR part 60, appendix A; or
(d) any other test method that has been validated according to the procedures in Method 301 of appendix A of this part 63.

Bottoms receiver means a tank that collects bottoms from continuous distillation before the stream is sent for storage or for further downstream processing.

Construction means the onsite fabrication, erection, or installation of an affected source or MCPU. Addition of new equipment to an MCPU subject to existing source standards does not constitute construction, but it may constitute reconstruction of the affected source or MCPU if it satisfies the definition of reconstruction in 63.2.

Consumption means the quantity of all HAP raw materials entering a process in excess of the theoretical amount used as reactant, assuming 100 percent stoichiometric conversion. The raw materials include reactants, solvents, and any other additives. If a HAP is generated in the process as well as added as a raw material, consumption includes the quantity generated in the process.

Continuous process vent means the point of discharge to the atmosphere (or the point of entry into a control device, if any) of a gas stream if the gas stream has the characteristics specified in 63.107(b) through (h), or meets the criteria specified in 63.107(i), except:

(1) the reference in 63.107(e) to a chemical manufacturing process unit that meets the criteria of 63.100(b) means an MCPU that meets the criteria of 63.2435(b);
(2) the reference in 63.107(h)(4) to 63.113 means Table 1 to this subpart;
(3) the references in 63.107(h)(7) to 63.119 and 63.126 mean Tables 4 and 5 to this subpart; and
(4) for the purposes of 63.2455, all references to the characteristics of a process vent (e.g., flowrate, total HAP concentration, or TRE index value) mean the characteristics of the gas stream.

Dedicated MCPU means an MCPU that consists of equipment that is used exclusively for one process, except that storage tanks assigned to the process according to the procedures in 63.2435(d) also may be shared by other processes.

A. State and Federally Enforceable Section (continued)

Deviation means any instance in which an affected source subject to this subpart, or an owner or operator of such a source:

(1) fails to meet any requirement or obligation established by this subpart including, but not limited to, any emission limit, operating limit, or work practice standard; or
(2) fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit; or
(3) fails to meet any emission limit, operating limit, or work practice standard in this subpart during startup, shutdown, or malfunction, regardless of whether or not such failure is permitted by this subpart.

Energetics means propellants, explosives, and pyrotechnics and include materials listed at 49 CFR 172.101 as Hazard Class I Hazardous Materials, Divisions 1.1 through 1.6.

Equipment means each pump, compressor, agitator, pressure relief device, sampling connection system, open-ended valve or line, valve, connector, and instrumentation system in organic HAP service; and any control devices or systems used to comply with Table 6 to this subpart.

Excess emissions means emissions greater than those allowed by the emission limit.

Family of materials means a grouping of materials with the same basic composition or the same basic end use or functionality produced using the same basic feedstocks with essentially identical HAP emission profiles (primary constituent and relative magnitude on a pound per product basis) and manufacturing equipment configuration. Examples of families of materials include multiple grades of the same product or different variations of a product (e.g., blue, black, and red resins).

Group 1 batch process vent means each of the batch process vents in a process for which the collective uncontrolled organic HAP emissions from all of the batch process vents are greater than or equal to 10,000 lb/yr at an existing source or greater than or equal to 3,000 lb/yr at a new source.

Group 2 batch process vent means each batch process vent that does not meet the definition of Group 1 batch process vent.

Group 1 continuous process vent means a continuous process vent with a total resource effectiveness index value, calculated according to 63.2455(b), that is less than 1.9 at an existing source and less than 5.0 at a new source.

Group 2 continuous process vent means a continuous process vent that does not meet the definition of a Group 1 continuous process vent.

Group 1 storage tank means a storage tank with a capacity greater than or equal to 10,000 gal storing material that has a maximum true vapor pressure of total HAP greater than or equal to 6.9 kilopascals at an existing source or greater than or equal to 0.69 kilopascals at a new source.

Group 2 storage tank means a storage tank that does not meet the definition of a Group 1 storage tank.

Group 1 transfer rack means a transfer rack that loads more than 0.65 million liters/year of liquids that contain organic HAP with a rack-weighted average partial pressure, as defined in 63.111, greater than or equal to 1.5 pound per square inch absolute.

Group 2 transfer rack means a transfer rack that does not meet the definition of a Group 1 transfer rack.

Group 1 wastewater stream means a wastewater stream consisting of process wastewater at an existing or new source that meets the criteria for Group 1 status in 63.2485(c) for compounds in Tables 8 and 9 to this subpart and/or a wastewater stream consisting of process wastewater at a new source that meets the criteria for Group 1 status in 63.132(d) for compounds in Table 8 to subpart G of this part 63.

A. State and Federally Enforceable Section (continued)

Group 2 wastewater stream means any process wastewater stream that does not meet the definition of a Group 1 wastewater stream.

Halogenated vent stream means a vent stream determined to have a mass emission rate of halogen atoms contained in organic compounds of 0.45 kilograms per hour or greater determined by the procedures presented in 63.115(d)(2)(v).

Hydrogen halide and halogen HAP means hydrogen chloride, hydrogen fluoride, and chlorine.

In organic HAP service means that a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 5 percent by weight of total organic HAP as determined according to the provisions of 63.180(d). The provisions of 63.180(d) also specify how to determine that a piece of equipment is not in organic HAP service.

Isolated intermediate means a product of a process that is stored before subsequent processing. An isolated intermediate is usually a product of a chemical synthesis, fermentation, or biological extraction process. Storage of an isolated intermediate marks the end of a process. Storage occurs at any time the intermediate is placed in equipment used solely for storage.

Large control device means a control device that controls total HAP emissions of greater than or equal to 10 tpy, before control.

Maintenance wastewater means wastewater generated by the draining of process fluid from components in the MCPU into an individual drain system in preparation for or during maintenance activities. Maintenance wastewater can be generated during planned and unplanned shutdowns and during periods not associated with a shutdown. Examples of activities that can generate maintenance wastewater include descaling of heat exchanger tubing bundles, cleaning of distillation column traps, draining of pumps into an individual drain system, and draining of portions of the MCPU for repair. Wastewater from routine cleaning operations occurring as part of batch operations is not considered maintenance wastewater.

Maximum true vapor pressure has the meaning given in 63.111, except that it applies to all HAP rather than only organic HAP.

Miscellaneous organic chemical manufacturing process means all equipment which collectively function to produce a product or isolated intermediate that are materials described in 63.2435(b). For the purposes of this subpart, process includes any, all or a combination of reaction, recovery, separation, purification, or other activity, operation, manufacture, or treatment which are used to produce a product or isolated intermediate. A process is also defined by the following:

(1) routine cleaning operations conducted as part of batch operations are considered part of the process;
(2) each nondedicated solvent recovery operation is considered a single process;
(3) each nondedicated formulation operation is considered a single process that is used to formulate numerous materials and/or products; and
(4) quality assurance/quality control laboratories are not considered part of any process.
(5) ancillary activities are not considered a process or part of any process.

A. State and Federally Enforceable Section (continued)

Nondedicated solvent recovery operation means a distillation unit or other purification equipment that receives used solvent from more than one MCPU.

Nonstandard batch means a batch process that is operated outside of the range of operating conditions that are documented in an existing operating scenario but is still a reasonably anticipated event. For example, a nonstandard batch occurs when additional processing or processing at different operating conditions must be conducted to produce a product that is normally produced under the conditions described by the standard batch. A nonstandard batch may be necessary as a result of a malfunction, but it is not itself a malfunction.

On-site or on site means, with respect to records required to be maintained by this subpart or required by another subpart referenced by this subpart, that records are stored at a location within a major source which encompasses the affected source. On-site includes, but is not limited to, storage at the affected source or MCPU to which the records pertain, or storage in central files elsewhere at the major source.

Operating scenario means, for the purposes of reporting and recordkeeping, any specific operation of an MCPU as described by records specified in 63.2525(b).

Organic group means structures that contain primarily carbon, hydrogen, and oxygen atoms.

Organic peroxides means organic compounds containing the bivalent -o-o- structure which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

Predominant HAP means as used in calibrating an analyzer, the single organic HAP that constitutes the largest percentage of the total organic HAP in the analyzed gas stream, by volume.

Process tank means a tank or vessel that is used within a process to collect material discharged from a feedstock storage tank or equipment within the process before the material is transferred to other equipment within the process or a product storage tank. A process tank has emissions that are related to the characteristics of the batch cycle, and it does not accumulate product over multiple batches. Surge control vessels and bottoms receivers are not process tanks.

Production-indexed HAP consumption factor (HAP factor) means the result of dividing the annual consumption of total HAP by the annual production rate, per process.

Production-indexed VOC consumption factor (VOC factor) means the result of dividing the annual consumption of total VOC by the annual production rate, per process.

Quaternary ammonium compounds means a type of organic nitrogen compound in which the molecular structure includes a central nitrogen atom joined to four organic groups as well as an acid radical of some sort.

Recovery device means an individual unit of equipment used for the purpose of recovering chemicals from process vent streams for reuse in a process at the affected source and from wastewater streams for fuel value (i.e., net positive heating value), use, reuse, or for sale for fuel value, use or reuse. Examples of equipment that may be recovery devices include absorbers, carbon adsorbers, condensers, oil-water separators or organic-water separators, or organic removal devices such as decanters, strippers, or thin-film evaporation units. To be a recovery device for a wastewater stream, a decanter and any other equipment based on the operating principle of gravity separation must receive only multi-phase liquid streams.

Responsible official means responsible official as defined in 40 CFR 70.2.

A. State and Federally Enforceable Section (continued)

Safety device means a closure device such as a pressure relief valve, frangible disc, fusible plug, or any other type of device which functions exclusively to prevent physical damage or permanent deformation to a unit or its air emission control equipment by venting gases or vapors directly to the atmosphere during unsafe conditions resulting from an unplanned, accidental, or emergency event. For the purposes of this subpart, a safety device is not used for routine venting of gases or vapors from the vapor headspace underneath a cover such as during filling of the unit or to adjust the pressure in response to normal daily diurnal ambient temperature fluctuations. A safety device is designed to remain in a closed position during normal operations and open only when the internal pressure, or another relevant parameter, exceeds the device threshold setting applicable to the air emission control equipment as determined by the owner or operator based on manufacturer recommendations, applicable regulations, fire protection and prevention codes and practices, or other requirements for the safe handling of flammable, combustible, explosive, reactive, or hazardous materials.

Shutdown means the cessation of operation of a continuous operation for any purpose. Shutdown also means the cessation of a batch operation, or any related individual piece of equipment required or used to comply with this subpart, if the steps taken to cease operation differ from those described in a standard batch or nonstandard batch. Shutdown also applies to emptying and degassing storage vessels. Shutdown does not apply to cessation of batch operations at the end of a campaign or between batches within a campaign when the steps taken are routine operations.

Small control device means a control device that controls total HAP emissions of less than 10 tpy, before control.

Standard batch means a batch process operated within a range of operating conditions that are documented in an operating scenario. Emissions from a standard batch are based on the operating conditions that result in highest emissions. The standard batch defines the uncontrolled and controlled emissions for each emission episode defined under the operating scenario.

Startup means the setting in operation of a continuous operation for any purpose; the first time a new or reconstructed batch operation begins production; for new equipment added, including equipment required or used to comply with this subpart, the first time the equipment is put into operation; or for the introduction of a new product/process, the first time the product or process is run in equipment. For batch operations, startup applies to the first time the equipment is put into operation at the start of a campaign to produce a product that has been produced in the past if the steps taken to begin production differ from those specified in a standard batch or nonstandard batch. Startup does not apply when the equipment is put into operation as part of a batch within a campaign when the steps taken are routine operations.

Storage tank means a tank or other vessel that is used to store liquids that contain organic HAP and/or hydrogen halide and halogen HAP and that has been assigned to an MCPU according to the procedures in 63.2435(d). The following are not considered storage tanks for the purposes of this subpart:

(1) vessels permanently attached to motor vehicles such as trucks, railcars, barges, or ships;
(2) pressure vessels designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere;
(3) vessels storing organic liquids that contain HAP only as impurities;
(4) wastewater storage tanks;
(5) bottoms receivers;
(6) surge control vessels; and
(7) process tanks.

A. State and Federally Enforceable Section (continued)

Supplemental gases are any gaseous streams that are not defined as process vents, or closed-vent systems from wastewater management and treatment units, storage tanks, or equipment components and that contain less than 50 ppmv TOC, as determined through process knowledge, that are introduced into vent streams or manifolds. Air required to operate combustion device burner(s) is not considered supplemental gas.

Surge control vessel means feed drums, recycle drums, and intermediate vessels immediately preceding continuous reactors, air-oxidation reactors, or distillation operations. Surge control vessels are used within an MCPU when in-process storage, mixing, or management of flowrates or volumes is needed to introduce material into continuous reactors, air-oxidation reactors, or distillation operations.

Total organic compounds or (TOC) means the total gaseous organic compounds (minus methane and ethane) in a vent stream.

Transfer rack means the collection of loading arms and loading hoses, at a single loading rack, that are assigned to an MCPU according to the procedures specified in 63.2435(d) and are used to fill tank trucks and/or rail cars with organic liquids that contain one or more of the organic HAP listed in section 112(b) of the CAA of this subpart. Transfer rack includes the associated pumps, meters, shutoff valves, relief valves, and other piping and valves.

Unit operation means those processing steps that occur within distinct equipment that are used, among other things, to prepare reactants, facilitate reactions, separate and purify products, and recycle materials. Equipment used for these purposes includes, but is not limited to, reactors, distillation columns, extraction columns, absorbers, decanters, dryers, condensers, and filtration equipment.

Waste management unit means the equipment, structure(s), and/or device(s) used to convey, store, treat, or dispose of wastewater streams or residuals. Examples of waste management units include wastewater tanks, air flotation units, surface impoundments, containers, oil-water or organic-water separators, individual drain systems, biological wastewater treatment units, waste incinerators, and organic removal devices such as steam and air stripper units, and thin film evaporation units. If such equipment is being operated as a recovery device, then it is part of a miscellaneous organic chemical manufacturing process and is not a waste management unit.

Wastewater means water that is discarded from an MCPU through a single POD and that contains either: an annual average concentration of compounds in Table 8 or 9 to this subpart of at least 5 ppmw and has an annual average flowrate of 0.02 liters per minute or greater; or an annual average concentration of compounds in Table 8 or 9 to this subpart of at least 10,000 ppmw at any flowrate. The following are not considered wastewater for the purposes of this subpart:

(1) stormwater from segregated sewers;
(2) water from fire-fighting and deluge systems, including testing of such systems;
(3) spills;
(4) water from safety showers;
(5) samples of a size not greater than reasonably necessary for the method of analysis that is used;
(6) equipment leaks;
(7) wastewater drips from procedures such as disconnecting hoses after cleaning lines; and
(8) noncontact cooling water.

Wastewater stream means a stream that contains only wastewater as defined in this paragraph (h).

Work practice standard means any design, equipment, work practice, or operational standard, or combination thereof, that is promulgated pursuant to section 112(h) of the CAA.

A. State and Federally Enforceable Section (continued)

25. Tables to Subpart FFFF of Part 63

The tables referenced in 40 CFR Part 63, Subpart FFFF could not be incorporated directly into this permit. Therefore, the tables are included in Attachment 1 hereto, and are hereby incorporated into this permit as if fully rewritten.

Table 1 to Subpart FFFF of Part 63 - Emission Limits and Work Practice Standards for Continuous Process Vents
Table 2 to Subpart FFFF of Part 63 - Emission Limits and work Practice Standards for Batch Process Vents
Table 3 to Subpart FFFF of Part 63 - Emission Limits for Hydrogen Halide and Halogen HAP Emissions or PM HAP Emissions from Process Vents
Table 4 to Subpart FFFF of Part 63 - Emission Limits for Storage Tanks
Table 5 to Subpart FFFF of Part 63 - Emission Limits and Work Practice Standards for Transfer Racks
Table 6 to Subpart FFFF of Part 63 - Requirements for Equipment Leaks
Table 7 to Subpart FFFF of Part 63 - Requirements for Wastewater Streams and Liquid Streams in Open Systems Within an MCPU
Table 8 to Subpart FFFF of Part 63 - Partially Soluble Hazardous Air Pollutants
Table 9 to Subpart FFFF of Part 63 - Soluble Hazardous Air Pollutants
Table 10 to Subpart FFFF of Part 63 - Requirements for Heat Exchange Systems
Table 11 to Subpart FFFF of Part 63 - Requirements for Reports
Table 12 to Subpart FFFF of Part 63 - Applicability of General Provisions (Subpart A) to Subpart FFFF of Part 63

26. Table 1 to Subpart FFFF of Part 63. Emission Limits and Work Practice Standards for Continuous Process Vents (as required in Section 63.2455)--see Subpart FFFF Tables attached to the end of this permit.

27. Table 2 to Subpart FFFF of Part 63. Emission Limits and Work Practice Standards for Batch Process Vents (as required in Section 63.2460)--see Subpart FFFF Tables attached to the end of this permit.

28. Table 3 to Subpart FFFF of Part 63. Emission Limits for Hydrogen Halide and Halogen HAP Emissions or PM HAP Emissions From Process Vents (as required in Section 63.2465)--see Subpart FFFF Tables attached to the end of this permit.

29. Table 4 to Subpart FFFF of Part 63. Emissions from Storage Tanks (as required in Section 63.2470)--see Subpart FFFF Tables attached to the end of this permit.

30. Table 5 to Subpart FFFF of Part 63. Emission Limits and Work Practice Standards for Transfer Racks (as required in Section 63.2475)--see Subpart FFFF Tables attached to the end of this permit.

31. Table 6 to Subpart FFFF of Part 63. Requirements for Equipment Leaks (as required in Section 63.2480)--see Subpart FFFF Tables attached to the end of this permit.

32. Table 7 to Subpart FFFF of Part 63. Requirements for Wastewater Streams and Liquid Streams in Open Systems Within an MCPU (as required in Section 63.2485)--see Subpart FFFF Tables attached to the end of this permit.

A. State and Federally Enforceable Section (continued)

33. Table 8 to Subpart FFFF of Part 63. Partially Soluble Hazardous Air Pollutants (as specified in 63.2485)--also see copy attached at the end of the permit.

As specified in 63.2485, the partially soluble HAP in wastewater that are subject to management and treatment requirements in this subpart FFFF are listed in the following table:

Chemical name . . . CAS No.

1. 1,1,1-Trichloroethane (methyl chloroform) 71556
2. 1,1,2,2-Tetrachloroethane 79345
3. 1,1,2-Trichloroethane 79005
4. 1,1-Dichloroethylene (vinylidene chloride) 75354
5. 1,2-Dibromoethane 106934
6. 1,2-Dichloroethane (ethylene dichloride) 107062
7. 1,2-Dichloropropane 78875
8. 1,3-Dichloropropene 542756
9. 2,4,5-Trichlorophenol 95954
10. 2-Butanone (MEK) 78933
11. 1,4-Dichlorobenzene 106467
12. 2-Nitropropane 79469
13. 4-Methyl-2-pentanone (MIBK) 108101
14. Acetaldehyde 75070
15. Acrolein 107028
16. Acrylonitrile 107131
17. Allyl chloride 107051
18. Benzene 71432
19. Benzyl chloride 100447
20. Biphenyl 92524
21. Bromoform (tribromomethane) 75252
22. Bromomethane 74839
23. Butadiene 106990
24. Carbon disulfide 75150
25. Chlorobenzene 108907
26. Chloroethane (ethyl chloride) 75003
27. Chloroform 67663
28. Chloromethane 74873
29. Chloroprene 126998
30. Cumene 98828
31. Dichloroethyl ether 111444
32. Dinitrophenol 51285
33. Epichlorohydrin 106898
34. Ethyl acrylate 140885
35. Ethylbenzene 100414
36. Ethylene oxide 75218
37. Ethylidene dichloride 75343
38. Hexachlorobenzene 118741
39. Hexachlorobutadiene 87683
40. Hexachloroethane 67721
41. Methyl methacrylate 80626
42. Methyl-t-butyl ether 1634044
43. Methylene chloride 75092
44. N-hexane 110543
45. N,N-dimethylaniline 121697
46. Naphthalene 91203
47. Phosgene 75445
48. Propionaldehyde 123386

A. State and Federally Enforceable Section (continued)

49. Propylene oxide 75569
50. Styrene 100425
51. Tetrachloroethylene (perchloroethylene) 79345
52. Tetrachloromethane (carbon tetrachloride) 56235
53. Toluene 108883
54. Trichlorobenzene (1,2,4-) 120821
55. Trichloroethylene 79016
56. Trimethylpentane 540841
57. Vinyl acetate 108054
58. Vinyl chloride 75014
59. Xylene (m) 108383
60. Xylene (o) 95476
61. Xylene (p) 106423

34. Table 9 to Subpart FFFF of Part 63. Soluble Hazardous Air Pollutants (as specified in 63.2485)--also see copy attached at the end of the permit.

As specified in 63.2485, the soluble HAP in wastewater that are subject to management and treatment requirements of this subpart FFFF are listed in the following table:

Chemical name . . .	CAS No.
1. Acetonitrile	75058
2. Acetophenone	98862
3. Diethyl sulfate	64675
4. Dimethyl hydrazine (1,1)	58147
5. Dimethyl sulfate	77781
6. Dinitrotoluene (2,4)	121142
7. Dioxane (1,4)	123911
8. Ethylene glycol dimethyl ether	
9. Ethylene glycol monobutyl ether acetate	
10. Ethylene glycol monomethyl ether acetate	
11. Isophorone	78591
12. Methanol	67561
13. Nitrobenzene	98953
14. Toluidine (o-)	95534
15. Triethylamine	121448

35. Table 10 to Subpart FFFF of Part 63. Work Practice Standards for Heat Exchange Systems (as required in Section 63.2490)--see Subpart FFFF Tables attached to the end of this permit.

36. Table 11 to Subpart FFFF of Part 63. Requirements for Reports [as required in Section 63.2520(a) and (b)]--see Subpart FFFF Tables attached to the end of this permit.

A. State and Federally Enforceable Section (continued)

37. Table 12 to Subpart FFFF of Part 63. Applicability of General Provisions to Subpart FFFF (as specified in 63.2540)--also see copy attached at the end of the permit.

As specified in 63.2540, the parts of the General Provisions that apply to you are shown in the following table:
Citation Subject Explanation
63.1 Applicability Yes
63.2 Definitions Yes
63.3 Units and Abbreviations Yes
63.4 Prohibited Activities Yes
63.5 Construction/Reconstruction Yes
63.6(a) Applicability Yes
63.6(b)(1)-(4) Compliance Dates for New and Reconstructed sources Yes
63.6(b)(5) Notification Yes
63.6(b)(6) [Reserved]
63.6(b)(7) Compliance Dates for New and Reconstructed Area Sources That Become Major Yes
63.6(c)(1)-(2) Compliance Dates for Existing Sources Yes
63.6(c)(3)-(4) [Reserved]
63.6(c)(5) Compliance Dates for Existing Area Sources That Become Major Yes
63.6(d) [Reserved]
63.6(e)(1)-(2) Operation & Maintenance Yes
63.6(e)(3)(i), (ii), and (v) through (viii) Startup, Shutdown, and Malfunction
Plan (SSMP) Yes, except information regarding Group 2 emission points and equipment leaks is not required in the SSMP, as specified in 63.2525(j).
63.6(e)(3)(iii) and (iv) Recordkeeping and Reporting During SSM No, 63.998(d)(3) and 63.998(c)(1)(ii)(D) through (G) specify the recordkeeping requirement for SSM events, and 63.2520(e)(4) specifies reporting requirements.
63.6(f)(1) Compliance Except During SSM Yes
63.6(f)(2)-(3) Methods for Determining Compliance Yes
63.6(g)(1)-(3) Alternative
Standard Yes
63.6(h) Opacity/Visible Emission (VE) Standards Only for flares for which Method 22 observations are required as part of a flare compliance assessment.
63.6(i)(1)-(14) Compliance Extension Yes
63.6(j) Presidential Compliance Exemption Yes

A. State and Federally Enforceable Section (continued)

63.7(a)(1)-(2)□Performance Test Dates□Yes, except substitute 150 days for 180 days.
63.7(a)(3) □CAA Section 114 Authority□Yes, and this paragraph also applies to flare compliance assessments as specified under 63.997(b)(2).
63.7(b)(1)□Notification of Performance Test□Yes
63.7(b)(2)□Notification of Rescheduling□Yes
63.7(c)□Quality Assurance/Test Plan□ Yes, except the test plan must be submitted with the notification of the performance test if the control device controls batch process vents.
63.7(d)□Testing Facilities□Yes
63.7(e)(1)□Conditions for Conducting Performance Tests□Yes, except that performance tests for batch process vents must be conducted under worst-case conditions as specified in 63.2460.
63.7(e)(2)□Conditions for Conducting Performance Tests□Yes
63.7(e)(3)□Test Run Duration□Yes
63.7(f)□Alternative
Test Method□Yes
63.7(g)□Performance Test Data Analysis□Yes
63.7(h)□Waiver of Tests□Yes
63.8(a)(1)□Applicability of Monitoring Requirements□Yes
63.8(a)(2)□Performance Specifications□Yes
63.8(a)(3)□[Reserved]□
63.8(a)(4)□Monitoring with Flares□Yes
63.8(b)(1)□Monitoring□Yes
63.8(b)(2)-(3)□Multiple Effluents and Multiple Monitoring Systems□Yes
63.8(c)(1)□Monitoring System Operation and Maintenance□Yes
63.8(c)(1)(i)□Routine and Predictable SSM□Yes
63.8(c)(1)(ii)□SSM not in SSMP□Yes
63.8(c)(1)(iii)□Compliance with Operation and Maintenance Requirements□Yes
63.8(c)(2)-(3)□Monitoring System Installation□Yes
63.8(c)(4)□CMS Requirements□No. CMS requirements are specified in referenced subparts G and SS of this part 63.
63.8(c)(4)(i)-(ii)□Only for the alternative standard, but 63.8(c)(4)(i) does not apply because the alternative standard does not require continuous opacity monitoring systems (COMS).
63.8(c)(5)□COMS Minimum Procedures□No. Subpart FFFF does not contain opacity or VE limits.
63.8(c)(6)□CMS Requirements□Only for the alternative standard in 63.2505.

A. State and Federally Enforceable Section (continued)

63.8(c)(7)-(8) CMS Requirements Only for the alternative standard in 63.2505. Requirements for CPMS are specified in referenced subparts G and SS of this part 63.
63.8(d) CMS Quality Control Only for the alternative standard in 63.2505.
63.8(e) CMS Performance
Evaluation
Only for the alternative standard in 63.2505, but 63.8(e)(5)(ii) does not apply because the alternative standard does not require COMS.
63.8(f)(1)-(5) Alternative
Monitoring
Method Yes, except you may also request approval using the precompliance report.
63.8(f)(6) Alternative to
Relative Accuracy Test Only applicable when using CEMS to demonstrate compliance, including the alternative standard in 63.2505.
63.8(g)(1)-(4) Data Reduction Only when using CEMS, including for the alternative standard in 63.2505, except that the requirements for COMS do not apply because subpart FFFF has no opacity or VE limits, and 63.8(g)(2) does not apply because data reduction requirements for CEMS are specified in 63.2450(j).
63.8(g)(5) Data Reduction No. Requirements for CEMS are specified in 63.2450(j). Requirements for CPMS are specified in referenced subparts G and SS of this part 63.
63.9(a) Notification
Requirements Yes
63.9(b)(1)-(5) Initial Notifications Yes
63.9(c) Request for
Compliance
Extension Yes
63.9(d) Notification of Special
Compliance
Requirements
for New Source Yes
63.9(e) Notification of Performance
Test Yes
63.9(f) Notification of VE/Opacity
Test No. Subpart FFFF does not contain opacity or VE limits.
63.9(g) Additional Notifications When Using CMS
Only for the alternative standard in 63.2505.

A. State and Federally Enforceable Section (continued)

63.9(h)(1)-(6) Notification of Compliance Status Yes, except subpart FFFF has no opacity or VE limits, and 63.9(h)(2) does not apply because 63.2520(d) specifies the required contents and due date of the notification of compliance status report.
63.9(i) Adjustment of Submittal Deadlines Yes
63.9(j) Change in Previous Information No, 63.2520(e) specifies reporting requirements for process changes.
63.10(a) Recordkeeping/Reporting Yes
63.10(b)(1) Recordkeeping/Reporting Yes
63.10(b)(2)(i)-(ii), (iv), (v) Records related to SSM No, 63.998(d)(3) and 63.998(c)(1)(ii)(D) through (G) specify recordkeeping requirements for periods of SSM.
63.10(b)(2)(iii) Records related to maintenance of air pollution control equipment Yes
63.10(b)(2)(vi), (x), and (xi) CMS Records Only for CEMS; requirements for CPMS are specified in referenced subparts G and SS of this part 63.
63.10(b)(2)(vii)-(ix) Records Yes
63.10(b)(2)(xii) Records Yes
63.10(b)(2)(xiii) Records Only for the alternative standard in 63.2505.
63.10(b)(2)(xiv) Records Yes
63.10(b)(3) Records Yes
63.10(c)(1)-(6),(9)-(15) Records Only for the alternative standard in 63.2505.
63.10(c)(7)-(8) Records No. Recordkeeping requirements are specified in 63.2525.
63.10(d)(1) General Reporting
Requirements Yes
63.10(d)(2) Report of Performance Test Results Yes
63.10(d)(3) Reporting Opacity or VE
Observations No. Subpart FFFF does not contain opacity or VE limits.
63.10(d)(4) Progress Reports Yes
63.10(d)(5)(i) Periodic Startup, Shutdown, and Malfunction Reports No, 63.2520(e)(4) and (5) specify the SSM reporting requirements.
63.10(d)(5)(ii) Immediate SSM Reports No

63.10(e)(1)-(2) Additional CMS Reports Only for the alternative standard, but 63.10(e)(2)(ii) does not apply because the alternative standard does not require COMS.63.10(e)(3) Reports No. Reporting requirements are specified in 63.2520.
63.10(e)(3)(i)-(iii) Reports No. Reporting requirements are specified in 63.2520.
63.10(e)(3)(iv)-(v) Excess Emissions Reports No. Reporting requirements are specified in 63.2520.
63.10(e)(3)(iv)-(v) Excess Emissions Reports No. Reporting requirements are specified in 63.2520.
63.10(e)(3)(vi)-(viii) Excess Emissions Report and Summary Report No. Reporting requirements are specified in 63.2520.
63.10(e)(4) Reporting COMS data No. Subpart FFFF does not contain opacity or VE limits.
63.10(f) Waiver for Recordkeeping/Reporting Yes
63.11 Flares Yes
63.12 Delegation Yes
63.13 Addresses Yes
63.14 Incorporation by Reference Yes
63.15 Availability of Information Yes

A. State and Federally Enforceable Section (continued)

38. National Emission Standards for Hazardous Air Pollutants for Miscellaneous Coating Manufacturing, Subpart HHHHH

VI. The Standard

The permittee shall comply with the applicable provisions of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Miscellaneous Coating Manufacturing as promulgated by the United States Environmental Protection Agency under 40 CFR 63, Subpart HHHHH.

The final rules found in 40 CFR 63, Subpart HHHHH establish emission limits and work practice standards and compliance requirements for miscellaneous coating manufacturing, wastewater and conveyance systems, transfer operations, storage tanks, and ancillary equipment associated with coating manufacturing. The following adhesive/material mixer systems may be subject to this subpart: P002, P003, P004, P006, P006, P007, P020, P021, P022, P023, P024, P026, P027, P028, P029, P030, P031, P039, P040, and P041, including their associated tanks (listed as insignificant emission units in Part II, Section B.1) and chemical transfer and loading to and from the tanks and the mixer systems.

Purpose of this subpart [63.7980]

This subpart establishes national emission standards for hazardous air pollutants (NESHAP) for miscellaneous coating manufacturing. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limits, operating limits, and work practice standards.

39. Subject facility [63.7985]

(a) The permittee is subject to the requirements in this subpart for the operation of miscellaneous coating manufacturing operations, as defined in paragraph (b) of this section, that meet the conditions specified in paragraphs (a)(1) through (4) of this section, as follows:

(1) facility located at or are part of a major source of hazardous air pollutants (HAP) emissions, as defined in section 112(a) of the Clean Air Act (CAA);

(2) facility manufactures coatings as defined in 63.8105;

(3) the productions process uses and produces HAP; and

(4) the coating operations are not part of an affected source under another subpart of this part 63.

(b) Miscellaneous coating manufacturing operations also include cleaning operations and the facilitywide collection of equipment described in the following paragraph (b)(1) through (4) of this section, that is used to manufacture coatings as defined in 63.8105:

(1) process vessels;

(2) storage tanks for feedstocks and products;

(3) components such as pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems; and

(4) wastewater tanks and transfer racks.

(c) If the predominant use of a transfer rack loading arm or storage tank (including storage tanks in series) is associated with miscellaneous coating manufacturing, and the loading arm or storage tank is not part of an affected source under a subpart of this part 63, the permittee shall assign the loading arm or storage tank to the miscellaneous coating manufacturing operations.

A. State and Federally Enforceable Section (continued)

If the predominant use of a transfer rack loading arm or storage tank cannot be determined, and the loading arm or storage tank is not part of an affected source under a subpart of this part 63, the permittee shall assign the loading arm or storage tank to the miscellaneous coating manufacturing operations.

If the use of a transfer rack loading arm or storage tank varies from year to year, the permittee shall base the determination on the utilization that occurred during the year preceding December 11, 2003 (the date of publication of this final rule in the Federal Register) or, if the loading arm or storage tank was not in operation during that year, the permittee shall base the use on the expected use for the first 5-year period following startup.

The permittee shall include the above determination in the notification of compliance status report specified in 63.8075(d). The permittee shall redetermine the predominant use of each transfer rack loading arm or storage tank at least once every 5 years following the compliance date.

(d) The requirements for miscellaneous coating manufacturing sources in this subpart do not apply to operations described in paragraphs (c)(1) through (4) of this section, as follows:

(1) research and development facilities, as defined in section 112(c)(7) of the CAA;

(2) the affiliated operations located at an affected source under subparts GG (National Emission Standards for Aerospace Manufacturing and Rework Facilities), KK (National Emission Standards for the Printing and Publishing Industry), JJJJ (NESHAP: Paper and Other Web Coating), future MMMM (National Emission Standards for Miscellaneous Metal Parts and Products Surface Coating Operations) and SSSS (NESHAP: Surface Coating of Metal Coil) of 40 CFR part 63. Affiliated operations include, but are not limited to, mixing or dissolving of coating ingredients; coating mixing for viscosity adjustment, color tint or additive blending, or pH adjustment; cleaning of coating lines and coating line parts; handling and storage of coatings and solvent; and conveyance and treatment of wastewater.

(3) ancillary equipment such as boilers and incinerators (only those not used to comply with the emission limits in Tables 1 through 5 to this subpart), chillers and refrigeration systems, and other equipment that is not directly involved in the manufacturing of a coating (i.e., it operates as a closed system, and materials are not combined with materials used to manufacture the coating); and

(4) quality assurance/quality control laboratories.

40. Applicability of Subpart HHHHH [63.7990]

(a) This subpart applies to each miscellaneous coating manufacturing affected source as defined in 63.7985(a)

(b) The miscellaneous coating manufacturing affected source is the miscellaneous coating manufacturing operations as defined in 63.7985(b).

(c) An affected source is a new affected source if construction or reconstruction of commenced after April 4, 2002, and meet the applicability criteria at the time construction or reconstruction sommenced.

A. State and Federally Enforceable Section (continued)

41. Compliance Dates [63.7995]

(a) If the permittee installs a new affected source, compliance with this subpart shall be attained according to the requirements in paragraphs (a)(1) and (2) as follows:

(1) If the new affected source starts up before December 11, 2003, then the permittee must comply with the requirements for new sources in this subpart no later than December 11, 2003.

(2) If the new affected source starts up after December 11, 2003, then the permittee must comply with the requirements for new sources in this subpart upon startup of the affected source.

(b) The existing emission units subject to this subpart, including all the equipment, tanks, transfer operations, and insignificant emissions units associated with the subject emissions units (where applicable), shall attain compliance with 40 CFR 63 Subpart HHHHH by December 11, 2006.

(c) If the permittee adds equipment to an existing affected source after December 11, 2003 compliance with the requirements in this subpart shall be attained upon startup of the added equipment.

(d) The permittee shall meet the notification requirements in 63.8070 according to the schedule in 63.8070 and in 40 CFR part 63, subpart A. Some of the notifications must be submitted before the required compliance date with the emission limits, operating limits, and work practice standards in this subpart.

42. Compliance options when subject to more than one subpart of 60 CFR 63 [63.8090]

(a) Compliance with 40 CFR parts 264 and 265, subparts AA, BB, and/or CC.

(1) Following the compliance dates specified in 63.7995, a permittee having a control device that is used to comply with this subpart (HHHHH) and it is also subject to monitoring, recordkeeping, and reporting requirements in 40 CFR part 264, subpart AA, BB, or CC; or the monitoring and recordkeeping requirements in 40 CFR part 265, subpart AA, BB, or CC; and the device is in compliance with the periodic reporting requirements under 40 CFR part 264, subpart AA, BB, or CC that would apply to the control device if the permittee had final-permitted status, may elect to comply either with the monitoring, recordkeeping, and reporting requirements of this subpart; or with the monitoring and recordkeeping requirements in 40 CFR part 264 or 265 and the reporting requirements in 40 CFR part 264, as described in this paragraph (a)(1), which constitute compliance with the monitoring, recordkeeping, and reporting requirements of this subpart. If the permittee elects to comply with the monitoring, recordkeeping, and reporting requirements in 40 CFR parts 264 and/or 265, the information required for the compliance report in 63.8075(e) shall also be submitted; the permittee shall also identify in the notification of compliance status report required by 63.8075(d) the monitoring, recordkeeping, and reporting authority under which compliance will be demonstrated.

A. State and Federally Enforceable Section (continued)

(2) Following the compliance dates specified in 63.7995, if an affected source has equipment that is also subject to 40 CFR part 264, subpart BB, or to 40 CFR part 265, subpart BB, compliance with the recordkeeping and reporting requirements of 40 CFR parts 264 and/or 265 may be used to comply with the recordkeeping and reporting requirements of this subpart, to the extent that the requirements of 40 CFR parts 264 and/or 265 duplicate the requirements of this subpart. The permittee shall identify in the notification of compliance status report required by 63.8075(d) if compliance will be demonstrated with the recordkeeping and reporting authority under 40 CFR part 264 and/or 265.

(b) Compliance with 40 CFR part 60, subpart Kb Following the compliance dates specified in 63.7995, the permittee is considered in compliance with the provisions of this subpart HHHHH for any storage tank that is assigned to miscellaneous coating manufacturing operations and that is both controlled with a floating roof and in compliance with the provisions of 40 CFR part 60, subpart Kb. Compliance with this subpart HHHHH is also demonstrated for any storage tank with a fixed roof, closed-vent system, and control device in compliance with the provisions of 40 CFR part 60, subpart Kb, except that the permittee shall comply with the monitoring, recordkeeping, and reporting requirements in this subpart HHHHH. The permittee shall identify in the notification of compliance status report required by 63.8075(d) which storage tanks are in compliance with 40 CFR 60, subpart Kb.

43. Applicable General Provisions [63.8095]

Table 10 to this subpart shows which parts of the General Provisions in 63.1 through 63.15 apply to miscellaneous coating manufacturing operations.

44. Implementation and enforcement of this subpart [63.8100]

(a) This subpart can be implemented and enforced by the U.S. Environmental Protection Agency (U.S. EPA), or through the delegated authority of the Ohio EPA. As the U.S. EPA Administrator has delegated authority to the Ohio EPA, the Ohio EPA also has the authority to implement and enforce this subpart.

(b) In delegating implementation and enforcement authority of this subpart to the Ohio EPA under 40 CFR part 63, subpart E, the authorities contained in paragraphs (b)(1) through (4) of this section are retained by the Administrator of U.S. EPA and are not delegated to the State, local, or tribal agency:

(1) approval of alternatives to the non-opacity emission limits and work practice standards in 63.2450(a) under 63.6(g);

(2) approval of major alternatives to test methods under 63.7(e)(2)(ii) and (f) and as defined in 63.90;

(3) approval of major alternatives to monitoring under 63.8(f) and as defined in 63.90; and

(4) approval of major alternatives to recordkeeping and reporting under 63.10(f) and as defined in 63.90.

(c) Delegation of the implementation and enforcement authority of this subpart to the State of Ohio was promulgated in 40CFR62 with the approval of OAC rules 3745-31-28.

A. State and Federally Enforceable Section (continued)

45. VII Applicable Emission Limits, Work Practice Standards, Compliance and Operational Requirements

General Requirements [63.8000]

(a) The permittee shall be in compliance with the emission limits and work practice standards in Tables 1 through 5 to this subpart at all times, except during periods of startup, shutdown, and malfunction; shall meet the requirements specified in paragraphs (b) and (c) of this section; shall meet the requirements specified in 63.8005 through 63.8025 (or the alternative means of compliance in 63.8050), except as specified in paragraph (d) of this section; and shall meet the notification, reporting, and recordkeeping requirements specified in 63.8070, 63.8075, and 63.8080.

(b) General requirements.

(1) If an emission stream contains halogen atoms, the permittee shall determine whether it meets the definition of a halogenated stream by calculating the concentration of each organic compound that contains halogen atoms using the procedures specified in 63.115(d)(2)(v), multiplying each concentration by the number of halogen atoms in the organic compound, and summing the resulting halogen atom concentrations for all of the organic compounds in the emission stream. Alternatively, the permittee may elect to designate the emission stream as halogenated.

(2) Opening of a safety device, as defined in 63.8105, is allowed at any time conditions require it to avoid unsafe conditions.

(c) Compliance requirements for closed vent systems and control devices. If a control device is used to comply with an emission limit in Table 1, 2, or 5 to this subpart, the permittee shall comply with the requirements in subpart SS of 40 CFR part 63 as specified in paragraphs (c)(1) through (3) of this section, except as specified in paragraph (d) of this section.

(1) If organic HAP emissions are reduced by venting emissions through a closed-vent system to any combination of control devices (except a flare), the permittee shall meet the requirements of 63.982(c).

(2) If organic HAP emissions are reduced by venting emissions through a closed-vent system to a flare, the permittee shall meet the requirements of 63.982(b). A flare shall not be used to control halogenated vent streams or hydrogen halide and halogen HAP emissions.

(3) If a halogen reduction device is used to reduce hydrogen halide and halogen HAP emissions that are generated by combusting halogenated vent streams, the requirements of 63.994 must be met. If a halogen reduction device is used before a combustion device, the halogen atom emission rate prior to the combustion device must be determined according to the procedures in 63.115(d)(2)(v).

(d) Exceptions to the requirements specified in other subparts of this part 63

(1) Requirements for performance tests: See Testing Requirement Section

(2) Design evaluation: See Testing Requirement Section

(3) Periodic verification. For a control device with total inlet HAP emissions less than 1 tpy, the permittee shall establish an operating limit(s) for a parameter(s) that will be measured and recorded at least once per averaging period (i.e., daily or block) to verify that the control device is operating properly. The permittee may elect to measure the same parameter(s) that is required for control devices that control inlet HAP emissions equal to or greater than 1 tpy. If the parameter will not be measured continuously, the permittee shall request approval of the proposed procedure in the precompliance report. The permittee shall identify the operating limit(s) and the measurement frequency and the rationale to support how these measurements demonstrate the control device is operating properly.

A. State and Federally Enforceable Section (continued)

(4) Continuous emissions monitoring systems. Each continuous emissions monitoring system (CEMS) shall be installed, operated, and maintained according to the requirements in 63.8 and paragraphs (d)(4)(i) through (iv) as follows:

(i) Each CEMS shall be installed, operated, and maintained according to the applicable Performance Specification of 40 CFR part 60, appendix B, and according to paragraph (d)(4)(ii) of this section, except as specified in paragraph (d)(4)(i)(A) of this section. For any CEMS meeting Performance Specification 8, compliance shall also be demonstrated with appendix F, procedure 1 of 40 CFR part 60.

(A) If a CEMS other than an Fourier Transform Infrared Spectroscopy (FTIR) is used in meeting the requirements of Performance Specification 15 to measure hydrogen halide and halogen HAP, until a specific Performance Specification is promulgated, the permittee must prepare a monitoring plan and submit it for approval in accordance with the procedures specified in 63.8.

(B) [Reserved]

(ii) The permittee shall determine the calibration gases and reporting units for TOC CEMS in accordance with paragraph (d)(4)(ii)(A), (B), or (C) of this section, as follows:

(A) For CEMS meeting Performance Specification 9 or 15 requirements, determine the target analyte(s) for calibration using either process knowledge of the control device inlet stream or the screening procedures of Method 18 on the control device inlet stream.

(B) For CEMS meeting Performance Specification 8 used to monitor performance of a combustion device, calibrate the instrument on the predominant organic HAP and report the results as carbon (C1), and use Method 25A or any approved alternative as the reference method for the relative accuracy tests.

(C) For CEMS meeting Performance Specification 8 used to monitor performance of a noncombustion device, determine the predominant organic HAP using either process knowledge or the screening procedures of Method 18 on the control device inlet stream, calibrate the monitor on the predominant organic HAP, and report the results as C1. Use Method 18, ASTM D6420-99, or any approved alternative as the reference method for the relative accuracy tests, and report the results as C1.

(iii) The permittee shall conduct a performance evaluation of each CEMS according to the requirements in 40 CFR 63.8 and according to the applicable Performance Specification of 40 CFR part 60, appendix B, except that the schedule in 63.8(e)(4) does not apply, and the results of the performance evaluation shall be included in the notification of compliance status report.

(iv) The CEMS data shall be reduced to operating day or operating block averages computed using valid data consistent with the data availability requirements specified in 63.999(c)(6)(i)(B) through (D), except monitoring data also are sufficient to constitute a valid hour of data if measured values are available for at least two of the 15-minute periods during an hour when calibration, quality assurance, or maintenance activities are being performed. An operating block is a period of time from the beginning to end of batch operations in the manufacturing of a coating. Operating block averages may be used only for batch process vessel data.

(5) Continuous parameter monitoring. The provisions in paragraphs (d)(5)(i) through (iii) of this section apply in addition to the requirements for continuous parameter monitoring system (CPMS) in subpart SS of 40 CFR part 63.

(i) The permittee shall record the results of each calibration check and all maintenance performed on the CPMS as specified in 63.998(c)(1)(ii)(A).

A. State and Federally Enforceable Section (continued)

(ii) When subpart SS of this part 63 uses the term "a range" or "operating range" of a monitored parameter, it means an "operating limit" for a monitored parameter for the purposes of this subpart.

(iii) As an alternative to measuring pH as specified in 63.994(c)(1)(i), the permittee may elect to continuously monitor the caustic strength of the scrubber effluent.

(6) Startup, shutdown, and malfunction. Sections 63.998(b)(2)(iii) and (b)(6)(i)(A), which apply to the exclusion of monitoring data collected during periods of startup, shutdown, and malfunction (SSM) from daily averages, do not apply for the purposes of this subpart.

(7) Reporting.

(i) When 63.8005 through 63.8025 reference other subparts in this part 63 that use the term "periodic report," it means "compliance report" for the purposes of this subpart.

(ii) When there are conflicts between this subpart and referenced subparts for the due dates of reports required by this subpart, reports shall be submitted according to the due dates presented in this subpart.

(iii) Excused excursions, as defined in subpart SS of 40 CFR part 63, are not allowed.

46. Requirements for process vessels [63.8005]

(a) Process vessels shall meet each emission limit and work practice standard that applies in Table 1 to this subpart, except as specified in 63.8050 and 63.8055, and shall meet each applicable requirement specified in 63.8000(b). For each control device used to comply with Table 1 to this subpart, the permittee shall comply with subpart SS of this part 63 as specified in 63.8000(c), except as specified in 63.8000(d) and paragraphs (b) through (g) of this section.

(b) When subpart SS of this part 63 refers to process vents, it means process vessel vents for the purposes of this section.

(c) Process condensers, as defined in 63.1251, are not considered to be control devices for process vessels.

(d) Initial compliance.

(1) To demonstrate initial compliance with a percent reduction emission limit in Table 1 to this subpart, the permittee shall conduct the performance test or design evaluation under conditions as specified in 63.7(e)(1), except that the performance test or design evaluation shall be conducted under worst-case conditions. The performance test for a control device used to control emissions from process vessels shall be conducted according to 63.1257(b)(8), including the submittal of a site-specific test plan for approval prior to testing. The requirements in 63.997(e)(1)(i) and (iii) also do not apply for performance tests conducted to determine compliance with the emission limits for process vessels.

(2) For the initial compliance demonstration for condensers, the permittee shall determine uncontrolled emissions using the procedures specified in 63.1257(d)(2), and shall determine controlled emissions using the procedures specified in 63.1257(d)(3)(i)(B) and (iii).

A. State and Federally Enforceable Section (continued)

(3) The permittee shall demonstrate that each process condenser is properly operated according to the procedures specified in 63.1257(d)(2)(i)(C)(4)(ii) and (d)(3)(iii)(B). The reference in 63.1257(d)(3)(iii)(B) to the alternative standard in 63.1254(c) does not apply for the purposes of this subpart. As an alternative to measuring the exhaust gas temperature, as required by 63.1257(d)(3)(iii)(B), the permittee may elect to measure the liquid temperature in the receiver.

(4) The permittee shall conduct a performance test or compliance demonstration equivalent to an initial compliance demonstration within 360 hours of a change in operating conditions that are not considered to be within the previously established worst-case conditions.

(e) Establishing operating limits. The permittee shall establish operating limits under the conditions required for the initial compliance demonstration, except the permittee may elect to establish operating limit(s) for conditions other than those under which a performance test was conducted as specified in paragraph (e)(1) of this section and, if applicable, paragraph (e)(2) of this section.

(1) The operating limits may be based on the results of the performance test and supplementary information such as engineering assessments and manufacturer's recommendations. These limits may be established for conditions as unique as individual emission episodes. The rationale shall be provided in the precompliance report for the specific level for each operating limit, including any data and calculations used to develop the limit and a description of why the limit indicates proper operation of the control device. The procedures provided in this paragraph (e)(1) have not been approved by the Administrator and determination of the operating limit using these procedures is subject to review and approval by the Administrator.

(2) If the permittee elects to establish separate operating limits for different emission episodes, records must be maintained as specified in 63.8085(g) of each point at which the change is made from one operating limit to another, even if the duration of the monitoring for an operating limit is less than 15 minutes.

(f) Averaging periods. If separate operating limits for different emission episodes are established, the permittee may elect to determine operating block averages instead of the daily averages specified in 63.998(b)(3). An operating block is a period of time that is equal to the time from the beginning to end of an emission episode or sequence of emission episodes.

(g) Flow indicators. If flow to a control device could be intermittent, the permittee shall install, calibrate, and operate a flow indicator at the inlet or outlet of the control device to identify periods of no flow. Periods of no flow may not be used in daily or block averages, and it may not be used in fulfilling a minimum data availability requirement.

A. State and Federally Enforceable Section (continued)

47. Requirements for storage tanks [63.8010]

(a) Storage tanks shall meet each emission limit that applies in Table 2 to this subpart, and shall also meet each applicable requirement specified in 63.8000(b). For each control device used to comply with Table 2 to this subpart, the permittee shall comply with subpart SS of this part 63 as specified in 63.8000(c), except as specified in 63.8000(d) and paragraphs (b) through (d) of this section, as follows:

(b) Exceptions to subparts SS and WW of this part 63

(1) If a performance test or design evaluation is conducted for a control device used to control emissions only from storage tanks, operating limits must be established, monitoring must be conducted, and records must be kept using the same procedures as required in subpart SS of this part 63 for control devices used to reduce emissions from process vents, instead of the procedures specified in 63.985(c), 63.998(d)(2)(i), and 63.999(b)(2).

(2) When the term "storage vessel" is used in subparts SS and WW of this part 63, the term "storage tank," as defined in 63.8105 applies for the purposes of this subpart.

(c) Planned routine maintenance. The emission limits in Table 2 to this subpart for control devices used to control emissions from storage tanks do not apply during periods of planned routine maintenance. Periods of planned routine maintenance of each control device, during which the control device does not meet the emission limit specified in Table 2 to this subpart, shall not exceed 240 hrs/yr. The permittee may submit an application to the Administrator requesting an extension of this time limit to a total of 360 hrs/yr. The application shall explain why the extension is needed, it must indicate that no material will be added to the storage tank between the time the 240-hr limit is exceeded and the control device is again operational, and it must be submitted at least 60 days before the 240-hr limit will be exceeded.

(d) Vapor balancing alternative. As an alternative to the emission limits specified in Table 2 to this subpart, the permittee may elect to implement vapor balancing in accordance with 63.1253(f), except as specified in paragraphs (d)(1) and (2) of this section, as follows:

(1) To comply with 63.1253(f)(6)(i), the owner or operator of an offsite cleaning and reloading facility shall comply with 63.7995 through 63.8105 instead of complying with 63.1253(f)(7)(ii).

(2) The permittee may elect to set a pressure relief device to a value less than the 2.5 pounds per square inch gage pressure (psig) required in 63.1253(f)(5), if the rationale is provided in the notification of compliance status report explaining why the alternative value is sufficient to prevent breathing losses at all times.

48. Requirements for equipment leaks [63.8015]

(a) Equipment leaks shall meet each requirement that applies in Table 3 to this subpart, except as specified in paragraphs (b) through (d) of this section, as follows:

(b) The requirement in 63.424(a) to inspect each piece of equipment during the loading of a gasoline cargo tank means when the equipment is operating in organic HAP service for the purposes of this subpart.

(c) When 63.1036 refers to batch processes, any part of the miscellaneous coating manufacturing operations applies for the purposes of this subpart.

(d) For the purposes of this subpart, pressure testing for leaks in accordance with 63.1036(b) is not required after reconfiguration of an equipment train if flexible hose connections are the only disturbed equipment.

A. State and Federally Enforceable Section (continued)

49. Requirements for wastewater streams [63.8020]

(a) Wastewater streams shall meet each requirement that applies in Table 4 to this subpart, and shall also meet each applicable requirement specified in 63.8000 and paragraphs (b) through (d) of this section, as follows:

(b) For each wastewater stream generated, the permittee shall either designate the wastewater stream as a Group 1 wastewater stream according to the procedures in paragraph (b)(1) of this section, or shall determine whether the wastewater stream is a Group 1 wastewater stream according to the procedures in paragraph (b)(2) of this section.

(1) The permittee may designate any wastewater stream as a Group 1 wastewater stream. The concentration does not need to be determined for any designated Group 1 wastewater stream.

(2) For wastewater streams that are not designate as Group 1 wastewater streams, the permittee shall use the procedures specified in 63.144(b) to establish the concentrations, except as specified in paragraphs (b)(2)(i) and (ii) of this section, as follows:

(i) References to Table 8 compounds in 63.144 do not apply for the purposes of this subpart.

(ii) Alternative test methods.

(A) As an alternative to the test methods specified in 63.144(b)(5)(i), Method 8260 or 8270 may be used as specified in 63.1257(b)(10)(iii).

(B) As an alternative to using the methods specified in 63.144(b)(5)(i), the permittee may conduct wastewater analyses using Method 1666 or 1671 of 40 CFR part 136, appendix A, and comply with the sampling protocol requirements specified in 63.144(b)(5)(ii). The validation requirements specified in 63.144(b)(5)(iii) do not apply if using Method 1666 or 1671 of 40 CFR part 136, appendix A.

(c) For each enhanced biological treatment unit used to comply with the requirements in Table 4 to this subpart, the permittee shall monitor total suspended solids (TSS), biological oxygen demand (BOD), and the biomass concentration. In the precompliance report the permittee shall identify and provide rationale for proposed operating limits for these parameters, methods for monitoring, the frequency of monitoring, and recordkeeping and reporting procedures that will demonstrate proper operation of the enhanced biological treatment unit. Alternatively, the permittee may use the precompliance report to request to monitor other parameters, which must include a description of planned reporting and recordkeeping procedures and the basis for the selected monitoring frequencies and the methods that will be used.

(d) If the wastewater is transferred offsite for enhanced biological treatment, the permittee shall obtain written certification from the offsite facility stating that the offsite facility shall comply with the requirements of this subpart. The certifying entity may revoke the certification by providing 90 days notice; and upon expiration of the notice period, wastewater may not be transferred to that treatment facility.

50. Requirements for transfer operations [63.8025]

(a) The permittee shall comply with each emission limit and work practice standard in Table 5 to this subpart that applies to transfer operations, and shall meet all applicable requirements specified in 63.8000(b). For each control device used to comply with Table 5 to this subpart, the permittee shall comply with subpart SS of this part 63 as specified in 63.8000(c), except as specified in 63.8000(d) and paragraph (b) of this section, as follows:

(b) If the permittee conducts Group 1 transfer operations, as defined in 63.8105, then all transfer racks used for bulk loading coatings shall meet the requirements for high throughput transfer racks in subpart SS of this part.

A. State and Federally Enforceable Section (continued)

51. Requirements for heat exchange systems [63.8030]

(a) The permittee shall comply with the requirements specified in Table 6 to this subpart that apply to heat exchange systems, except as specified in paragraphs (b) through (e) of this section, as follows:

(b) The phrase "a chemical manufacturing process unit meeting the conditions of 63.100(b)(1) through (b)(3) of this section in 63.104(a)" means the miscellaneous coating manufacturing operations defined in 63.7985(b) for the purposes of this subpart.

(c) The reference to 63.100(c) in 63.104(a) does not apply for the purposes of this subpart.

(d) The reference to 63.103(c)(1) in 63.104(f)(1) does not apply. For the purposes of this subpart, records shall be retained as specified in 63.10(b)(1).

(e) The reference to the periodic report required by 63.152(c) of subpart G of this part means the compliance report required by 63.8075(e) for the purposes of this subpart.

52. Alternative Means of Compliance 63.8050 & 63.8055

Emissions averaging for stationary process vessels at existing sources [63.8050]

(a) As an alternative to complying with the requirements in Table 1 to this subpart for each individual stationary process vessel, the permittee may elect to comply with emissions averaging for stationary process vessels greater than or equal to 250 gallons (gal) for an existing affected source as specified in paragraphs (b) through (e) of this section, as follows:

(b) General requirements.

(1) The State of Ohio may prohibit averaging of HAP emissions and has the option to require the owner or operator of the existing affected source to comply with the emission limits and work practice standards in Table 1 to this subpart.

(2) All stationary process vessels in an emissions averaging group shall be equipped with a tightly-fitting vented cover.

(c) Initial compliance. In order to demonstrate initial compliance with the emissions averaging alternative, the permittee shall comply with the provisions in paragraphs (c)(1) through (4) of this section and shall perform the calculations required therein as follows:

(1) Estimate uncontrolled emissions from each affected stationary process vessel in pounds per batch using the procedures specified in 63.1257(d)(2), except as specified in the following paragraphs (c)(1)(i) and (ii) of this section. For the purposes of this section, uncontrolled emissions means the emissions from the vessel if it were equipped only with a tightly-fitting vented cover. The permittee shall identify the range of typical operating parameters and perform the calculation using the values that result in the highest emissions, and shall document the operating parameters and resulting emissions calculations in the precompliance report.

A. State and Federally Enforceable Section (continued)

(i) Uncontrolled emissions due to heating shall not be calculate using Equation 13 of subpart GGG of this part 63.

(ii) The statement in 63.1257(d)(2)(i)(B) that "the partial pressure of HAP shall be assumed to be 25 percent of the saturated value if the purge flow rate is greater than 100 scfm" does not apply. For the purposes of this subpart, multiply the HAP partial pressure in Equation 12 of 40 CFR part 63, subpart GGG by a HAP-specific saturation factor determined in accordance with Equations 1 through 3 of this section. Solve equation 1 of this section iteratively beginning with saturation factors (in the right-hand side of the equation) of 1.0 for each condensable compound. Stop iterating when the calculated saturation factors for all compounds are the same to two significant figures for subsequent iterations. Note that for multi-component emission streams, saturation factors must be calculated for all noncondensables in the emission stream.

Equation 1:

Si= [Ki x A] / [KiA + V + (summation of all condensable compound's Si to Sn x Visat)]

Equation 2:

Visat = [V x Pi] / [Pt - (summation of all condensable compound's Pi to Pn)]

Equation 3:

Ki = Ko (Mo/Mi)1/3

Where:

Si =saturation factor for individual condensable compounds in the emission stream
Pi =partial pressure of individual condensable compounds in the emission stream calculated using Raoult's Law or other appropriate methods
PT =pressure of the vessel vapor space
A =surface area of liquid
V =purge flow rate as used in Equation 12 of 40 CFR part 63, subpart GGG
Visat =volumetric flowrate of condensable compounds in the emission stream
Ki =mass transfer coefficient of individual condensable compounds in the emission stream
Ko =mass transfer coefficient of a reference compound (e.g., 0.83 cm/s for water)
Mo =molecular weight of reference compound (e.g., 18.02 for water)
Mi =molecular weight of individual condensable compounds in the emission stream
n =number of condensable compounds in the emission stream

A. State and Federally Enforceable Section (continued)

(2) Estimate controlled emissions in pounds per batch for each vessel as specified in paragraphs (c)(2)(i) through (iii) of this section, as follows:

(i) Except as specified in paragraphs (c)(2)(ii) and (iii) of this section, estimate controlled emissions as if the vessel were controlled in compliance with entry 2.b.i. in Table 1 to this subpart.

(ii) Estimate the controlled emissions using the control level achieved on November 15, 1990 if that value is greater than the applicable control level required by entry 2.b.i in Table 1 to this subpart.

(iii) Estimate the controlled emissions using the control level required to comply with a State or Federal rule other than this subpart if that level is greater than the applicable control level required by entry 2.b.i in Table 1 to this subpart and the other rule was in effect before the date of the requested approval to comply with emissions averaging.

(3) Determine actual emissions in pounds per batch for each vessel in accordance with paragraphs (c)(2)(i), (ii), or (iii), above, as applicable.

(i) If emissions are routed through a closed-vent system to a condenser control device, determine controlled emissions using the procedures specified in 63.1257(d)(3).

(ii) If emissions are routed through a closed-vent system to any control device other than a condenser, determine actual emissions after determining the efficiency of the control device using the procedures in subpart SS of this part 63 as specified in 63.8000(c).

(iii) If the vessel is vented to the atmosphere, then actual emissions are equal to the uncontrolled emissions estimated in accordance with paragraph (c)(1) of this section.

(4) Provide rationale in the precompliance report for why the sum of the actual emissions will be less than the sum of emissions from the vessels if they had been controlled in accordance with Table 1 to this subpart. The actual emissions calculated according to paragraph (c)(3) of this section are emission limits that shall be incorporated into the next operating permit if emissions averaging is the approved method of compliance; and compliance with the established limits shall be as required in this permit.

(d) Continuous compliance through emissions averaging, existing sources.

(1) The permittee shall maintain a monthly log of the number of batches produced that can be correlated with the emissions estimates per batch developed in accordance with paragraph (c) of this section.

(2) The permittee shall sum the actual emissions for all of the process vessels in the emissions averaging group every three months, with the first 3-month period beginning on the compliance date, and shall compare the resulting total with the total emissions for the vessels calculated in accordance with paragraph (c)(2) of this section. Compliance is demonstrated if the sum of the actual emissions is less than the emissions estimated in accordance with paragraph (c)(2) of this section.

(3) For, The permittee shall establish operating limits and monitor control devices as specified in 63.8000.

(e) Record keeping and reporting. The permittee shall comply with the record keeping and reporting requirements in 63.8070, 63.8075, and 63.8080.

A. State and Federally Enforceable Section (continued)

53. Compliance with a weight percent HAP limit in coating products [63.8055]

(a) As an alternative to complying with the requirements in Table 1 to this subpart for each individual stationary process vessel at an existing source, the permittee may elect to comply with a 5 weight percent HAP limit for process vessels at the affected source, that are used to manufacture coatings with a HAP content of less than 0.05 kg per kg product as specified in paragraph (b) of this section, as follows:

(b) The permittee may only comply with this alternative during the production of coatings that contain less than 5 weight percent HAP, as determined using any of the procedures specified in paragraphs (b)(1) through (3) of this section, as follows:

(1) Method 311 (appendix A to 40 CFR part 63);

(2) Method 24 (appendix A to 40 CFR part 60) may be used to determine the mass fraction of volatile matter and that value may be used as a substitute for the mass fraction of HAP;

(3) An alternative test method for determining mass fraction of HAP may be used if prior approval is obtained from the Administrator. The procedure in 63.7(f) must be followed in order to submit an alternative test method for approval.

54. VIII Record keeping Requirements

Recordkeeping Requirements [63.8080]

The permittee shall maintain the records specified in paragraphs (a) through (f) of this section, as follows:

(a) each applicable record required by subpart A of this part 63 and in referenced subparts SS, TT, UU, and WW of this part 63;

(b) if complying with emissions averaging, records of the monthly number of batches for each process vessel, the quarterly actual emissions for each process vessel, the quarterly estimated emissions for each process vessel if it had been controlled as specified in Table 1 to this subpart, and comparison of the sums of the quarterly actual and estimated emissions as specified in 63.8050(d);

(c) a record of each time a safety device is opened to avoid unsafe conditions in accordance with 63.8000(b)(2);

(d) records of the results of each CPMS calibration check and the maintenance performed, as specified in 63.8000(d)(5);

(e) for each CEMS, the records of the date and time that each deviation started and stopped, and whether the deviation occurred during a period of startup, shutdown, or malfunction or during another period;

(f) In the SSMP required by 63.6(e)(3), the permittee is not required to include Group 2 or non-affected emission points. For equipment leaks only, the SSMP requirement is limited to control devices and is optional for other equipment.

(g) If establishing separate operating limits as allowed in 63.8005(e), the permittee shall maintain a log of operation or a daily schedule indicating the time when changing from one operating limit to another.

A. State and Federally Enforceable Section (continued)

55. VIV Reporting Requirements

Notifications requirements [63.8070]

(a) The permittee shall submit all of the notifications in 63.6(h)(4) and (5), 63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that apply and by the dates as specified by rule.

(b) Initial notification.

(1) As specified in 63.9(b)(2) for an existing source, if startup of the affected source is before December 11, 2003, the permittee shall submit an initial notification not later than 120 calendar days after December 11, 2003.

(2) As specified in 63.9(b)(3), if startup of the new affected source is on or after December 11, 2003, the permittee shall submit an initial notification not later than 120 calendar days after becoming subject to this subpart.

(c) Notification of performance test. If required to conduct a performance test, the permittee shall submit a notification of intent to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin as required in 63.7(b)(1). For any performance test required as part of the initial compliance procedures for process vessels in Table 1 to this subpart, the permittee shall also submit the test plan required by 63.7(c) and the emission profile with the notification of the performance test.

56. Required reports [63.8075]

(a) The permittee shall submit each report in Table 9 to this subpart that applies to the facility.

(b) Unless the Administrator has approved a different schedule for submission of reports under 63.10(a), the permittee shall submit each report as specified in Table 9 to this subpart and paragraphs (b)(1) and (2) of this section, as follows:

(1) The compliance reports shall be submitted semiannually. The first report shall be submitted no later than 240 days after the applicable compliance date and shall cover the 6-month period beginning on the compliance date. Each subsequent compliance report shall cover the 6-month period following the preceding period.

(2) For each affected source that is subject to permitting regulations pursuant to 40 CFR part 70 or 40 CFR part 71, and if the Ohio EPA has established dates for submitting semiannual reports pursuant to 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), the permittee may request and submit the first and subsequent compliance reports according to the dates established and approved by the Ohio EPA, instead of according to the dates in Table 9.

(c) Precompliance report. The permittee shall submit a precompliance report to request approval of any of the information in the following paragraphs (c)(1) through (4) of this section. The Ohio EPA will either approve or disapprove the report within 90 days after receiving it. If disapproved, the permittee must still be in compliance with the emission limitations and work practice standards in this subpart by the compliance date. Approval requests may include the following:

(1) requests for approval to set operating limits for parameters other than those specified in 63.8005 through 63.8025, including parameters for enhanced biological treatment units; alternatively, the permittee may make these requests according to 63.8(f).

A. State and Federally Enforceable Section (continued)

(2) descriptions of daily or per batch demonstrations to verify that control devices subject to 63.8000(d)(3) are operating as designed;

(3) a description of the test conditions, data, calculations, and other information used to establish operating limits according to 63.8005(e)(1);

(4) If compling with emissions averaging in 63.8050, the data and results of emission calculations as specified in 63.8050(c)(1) through (3), and rationale for why the sum of actual emissions will be less than the sum of emissions if the process vessels were controlled in accordance with Table 1 to this subpart as specified in 63.8050(c)(4).

(d) Notification of compliance status report. The permittee shall submit a notification of compliance status report according to the schedule in paragraph (d)(1) of this section, and the notification of compliance status report shall include the information specified in paragraph (d)(2) of this section, as follows:

(1) The permittee shall submit the notification of compliance status report no later than 150 days after the applicable compliance date specified in 63.7995.

(2) The notification of compliance status report shall include the information in paragraphs (d)(2)(i) through (vi) of this section, as follows:

(i) the results of any applicability determinations (e.g., HAP content of coating products; halogenated vent stream determinations; group determinations for storage tanks, wastewater, and transfer operations; and equipment that is in organic HAP service);

(ii) the results of performance tests, engineering analyses, design evaluations, flare compliance assessments, inspections and repairs, and calculations used to demonstrate initial compliance according to 63.8005 through 63.8025 and 63.8055. Performance tests results shall include descriptions of sampling and analysis procedures and quality assurance procedures;

A. State and Federally Enforceable Section (continued)

(iii) descriptions of monitoring devices, monitoring frequencies, and the operating limits established during the initial compliance demonstrations, including data and calculations to support the levels established;

(iv) identification of parts of the affected source that are subject to overlapping requirements described in 63.8090 and the authority under which compliance is demonstrated;

(v) identification of storage tanks complying with the vapor balancing alternative in 63.8010(e);

(vi) if a Group 1 wastewater stream is transferred to an offsite facility for treatment, the name and location of the transferee and a description of the Group 1 wastewater stream that is sent to the treatment facility; if the offsite facility provides enhanced biological treatment, the certification required by 63.8020(d) that the offsite facility will comply with the requirements of this subpart.

(e) Compliance report. The compliance report shall contain the information specified in paragraphs (e)(1) through (8) of this section, as follow:

(1) company name and address;

(2) statement by a responsible official with that official's name, title, and signature, certifying the accuracy of the content of the report;

(3) date of report and beginning and ending dates of the reporting period;

(4) applicable records and information for periodic reports as specified in referenced subparts F, SS, TT, UU, and WW of this part 63;

(5) for each SSM during which excess emissions occur, the information specified in paragraphs (e)(5)(i) and (ii) of this section, as follow:

(i) records that the procedures specified in the startup, shutdown, and malfunction plan (SSMP) were followed or documentation of actions taken that were not consistent with the SSMP; and

A. State and Federally Enforceable Section (continued)

(ii) a description of each malfunction.

(6) information on deviations, as defined in 63.8105, according to paragraphs (e)(6)(i), (ii), and (iii) of this section, as follows:

(i) if there are no deviations from any emission limit, operating limit, or work practice standard specified in this subpart, a statement that there were no deviations from the emission limits, operating limits, or work practice standards during the reporting period;

(ii) for each deviation from an emission limit, operating limit, and work practice standard that occurs at an affected source where a continuous monitoring system (CMS) is/was not used to comply with the emission limit or work practice standards in this subpart, the information in paragraphs (e)(6)(ii)(A) through (C) of this section, as follows:

(A) the total operating time of each affected source during the reporting period;

(B) information on the number, duration, and cause of deviations (including unknown cause, if applicable), as applicable, and the corrective action taken;

(C) operating logs for the day(s) during which the deviation occurred, except operating logs are not required for deviations of the work practice standards for equipment leaks.

(iii) for each deviation from an emission limit or operating limit that occurs at an affected source where a CMS is used to comply with the emission limit in this subpart, the information in the following paragraphs (e)(6)(iii)(A) through (K) of this section; this includes periods of SSM:

(A) the date and time that each CMS was inoperative, except for zero (low-level) and high-level checks;

(B) the date, time, and duration that each CEMS was out-of-control, including the information in 63.8(c)(8);

A. State and Federally Enforceable Section (continued)

(C) the date and time that each deviation started and stopped, and whether each deviation occurred during a period of startup, shutdown, or malfunction or during another period

(D) a summary of the total duration of the deviation during the reporting period, and the total duration as a percent of the total source operating time during that reporting period;

(E) a breakdown of the total duration of the deviations during the reporting period into those that are due to startup, shutdown, control equipment problems, process problems, other known causes, and other unknown causes;

(F) a summary of the total duration of CMS downtime during the reporting period, and the total duration of CMS downtime as a percent of the total source operating time during that reporting period.;

(G) an identification of each HAP that is known to be in the emission stream or wastewater stream, as applicable;

(H) a description of the product being produced;

(I) identification of the CMS;

(J) the date of the latest CMS certification or audit; and

(K) the operating day or operating block average values of monitored parameters for each day(s) during which the deviation occurred.

(7) if using a CEMS, and there were no periods during which it was out-of-control as specified in 63.8(c)(7), a statement that there were no periods during which the CEMS was out-of-control during the reporting period;

(8) Notification of process change.

(i) except as specified in paragraph (e)(8)(ii) of this section, documentation of a change to any of the information submitted in either the notification of compliance status report or any previously reported notification of compliance status. The notification shall include all of the information in paragraphs (e)(8)(i)(A) and (B) of this section; as follows:

(A) revisions to any of the information reported in the original notification of compliance status report under paragraph (d) of this section; and

(B) information required by the notification of compliance status report under paragraph (d) of this section for changes involving the addition of processes or equipment at the affected source.

(ii) The permittee shall submit a report 60 days before the scheduled implementation date of any of the changes identified in paragraphs (e)(8)(ii)(A), (B), or (C) of this section, as follows:

(A) any change to the information contained in either the precompliance report or any previously reported change to the precompliance report;

(B) a change in the status of a control device from small to large; or

(C) a change in compliance status.

A. State and Federally Enforceable Section (continued)

57. X. Testing Requirements

Testing Requirements [from 63.8000 & 63.1257]

(d) Exceptions to the requirements specified in other subparts of this part 63:

(1) Requirements for performance tests. The requirements specified in paragraphs (d)(1)(i) through (v) of this section apply instead of or in addition to the requirements for performance testing of control devices as specified in subpart SS of 40 CFR part 63.

(i) conduct gas molecular weight analysis using Method 3, 3A, or 3B in appendix A to 40 CFR part 60;

(ii) measure moisture content of the stack gas using Method 4 in appendix A to 40 CFR part 60;

(iii) Method 320 of 40 CFR part 60, appendix A may be used as an alternative to using Method 18, Method 25/25A, or Method 26/26A of 40 CFR part 60, appendix A, to comply with any of the emission limits specified in Tables 1 through 7 to this subpart. When using Method 320, the analyte spiking procedures of section 13 of Method 320 shall be followed, unless it has been demonstrated that the complete spiking procedure has been conducted at a similar source.

(iv) Section 63.997(c)(1) does not apply. For the purposes of this subpart, results of all initial compliance demonstrations shall be included in the notification of compliance status report, which is due 150 days after the compliance date, as specified in 63.8075(d)(1).

(v) The option in 63.997(e)(2)(iv)(C) to demonstrate compliance with a percent reduction emission limit by measuring total organic carbon (TOC) is not allowed.

(vi) If the coating manufacturing operation does not have a closed-vent system as defined in 63.981, capture efficiency shall be determine using Method 204 of appendix M to 40 CFR part 51 for all stationary process vessels subject to requirements of Table 1 to this subpart.

(2) Design evaluation. To determine the percent reduction of a small control device, the permittee may elect to conduct a design evaluation as specified in 63.1257(a)(1) instead of a performance test as specified in subpart SS of this part 63. The permittee must establish the value(s) and basis for the operating limits as part of the design evaluation. To demonstrate that a control device meets the required control efficiency, a design evaluation must address the composition and organic HAP concentration of the vent stream entering the control device. A design evaluation also must address other vent stream characteristics and control device operating parameters as specified in 63.1257(a)(1), depending on the type of control device that is used. If the vent stream is not the only inlet to the control device, the efficiency demonstration also must consider all other vapors, gases, and liquids, other than fuels, received by the control device.

A. State and Federally Enforceable Section (continued)

58. Definitions that apply to this subpart [63.8105]

(a) For an affected source complying with the requirements in subpart SS of this part 63, the terms used in this subpart and in subpart SS of this part 63 have the meaning given them in 63.981, except as specified in 63.8000(d)(5)(ii) and (7), 63.8010(c)(2), 63.8025(b), and paragraph (g) of this section.

(b) For an affected source complying with the requirements in subpart TT of this part 63, the terms used in this subpart and in subpart TT of this part 63 have the meaning given them in 63.1001.

(c) For an affected source complying with the requirements in subpart UU of this part 63, the terms used in this subpart and in subpart UU of this part 63 have the meaning given them in 63.1020.

(d) For an affected source complying with the requirements in subpart WW of this part 63, the terms used in this subpart and subpart WW of this part 63 have the meaning given them in 63.1061, except as specified in 63.8000(d)(7), 63.8010(c)(2), and paragraph (g) of this section.

(e) For an affected source complying with requirements in 63.1253, 63.1257, and 63.1258, the terms used in this subpart and in 63.1253, 63.1257, and 63.1258 have the meaning given them in 63.1251, except as specified in 63.8000(d)(7) and paragraph (g) of this section.

(f) For an affected source complying with the requirements of 63.104, the terms used in this subpart and in 63.104 have the meaning given them in 63.101, except as specified in 63.8000(d)(7) and paragraph (g) of this section.

(g) All other terms used in this subpart are defined in the CAA, in 40 CFR 63.2, and in this paragraph (g). If a term is defined in 63.2, 63.981, 63.1001, 63.1020, 63.1061, or 63.1251 and in this paragraph (g), the definition in this paragraph (g) applies for the purposes of this subpart.

Bulk loading means the loading, into a tank truck or rail car, of liquid coating products that contain one or more of the organic HAP, as defined in section 112 of the CAA, from a loading rack. A loading rack is the system used to fill tank trucks and railcars at a single geographic site.

Coating means any material such as a paint, ink, or adhesive that is intended to be applied to a substrate and consists of a mixture of resins, pigments, solvents, and/or other additives. Typically, these materials are described by Standard Industry Classification (SIC) codes 285 or 289 and North American Industry Classification System (NAICS) codes 3255 and 3259.

Construction means the onsite fabrication, erection, or installation of an affected source. Addition of new equipment to an affected source does not constitute construction, but it may constitute reconstruction of the affected source if it satisfies the definition of reconstruction in 63.2.

Deviation means any instance in which an affected source subject to this subpart, or an owner or operator of such a source:

(1) Fails to meet any requirement or obligation established by this subpart including, but not limited to, any emission limit, operating limit, or work practice standard;
(2) Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit; or
(3) Fails to meet any emission limit, operating limit, or work practice standard in this subpart during startup, shutdown, or malfunction, regardless of whether or not such failure is permitted by this subpart.

A. State and Federally Enforceable Section (continued)

Enhanced biological treatment system means an aerated, thoroughly mixed treatment unit(s) that contains biomass suspended in water followed by a clarifier that removes biomass from the treated water and recycles recovered biomass to the aeration unit. The mixed liquor volatile suspended solids (biomass) is greater than 1 kilogram per cubic meter throughout each aeration unit. The biomass is suspended and aerated in the water of the aeration unit(s) either by submerged air flow or mechanical agitation. A thoroughly mixed treatment unit is a unit that is designed and operated to approach or achieve uniform biomass distribution and organic compound concentration throughout the aeration unit by quickly dispersing the recycled biomass and the wastewater entering the unit.

Excess emissions means emissions greater than those allowed by the emission limit.

Group 1a storage tank means a storage tank at an existing source with a capacity greater than or equal to 20,000 gal storing material that has a maximum true vapor pressure of total organic HAP greater than or equal to 1.9 pounds per square inch, absolute (psia). Group 1a storage tank also means a storage tank at a new source with either a capacity greater than or equal to 25,000 gal storing material that has a maximum true vapor pressure of total HAP greater than or equal to 0.1 psia or a capacity greater than or equal to 20,000 gal and less than 25,000 gal storing material that has a maximum true vapor pressure of total HAP greater than or equal to 1.5 psia.

Group 1b storage tank means a storage tank at a new source that has a capacity greater than or equal to 10,000 gal, stores material that has a maximum true vapor pressure of total organic HAP greater than or equal to 0.02 psia, and is not a Group 1a storage tank.

Group 2 storage tank means a storage tank that does not meet the definition of a Group 1a or Group 1b storage tank.

Group 1 transfer operations means all bulk loading of coating products if the coatings contain greater than or equal to 3.0 million gallons per year (gal/yr) of HAP with a weighted average HAP partial pressure greater than or equal to 1.5 psia.

Group 2 transfer operations means bulk loading of coating products that does not meet the definition of Group 1 transfer operations.

Group 1 wastewater stream means a wastewater stream that contains total partially soluble and soluble HAP at an annual average concentration greater than or equal to 4,000 parts per million by weight (ppmw) and load greater than or equal to 750 pounds per year (lb/yr) at an existing source or greater than or equal to 1,600 ppmw and any partially soluble and soluble HAP load at a new source.

Group 2 wastewater stream means a wastewater stream that does not meet the definition of a Group 1 wastewater stream.

Halogenated vent stream means a vent stream determined to contain halogen atoms in organic compounds at a concentration greater than or equal to 20 ppmv as determined by the procedures specified in 63.8000(b).

Hydrogen halide and halogen HAP means hydrogen chloride, chlorine, and hydrogen fluoride.

In organic HAP service means that a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 5 percent by weight of total organic HAP as determined according to the provisions of 63.180(d). The provisions of 63.180(d) also specify how to determine that a piece of equipment is not in organic HAP service.

Large control device means a control device that controls total HAP emissions of greater than or equal to 10 tpy, before control.

A. State and Federally Enforceable Section (continued)

Maximum true vapor pressure means the equilibrium partial pressure exerted by the total organic HAP in the stored or transferred liquid at the temperature equal to the highest calendar-month average of the liquid storage or transfer temperature for liquids stored or transferred above or below the ambient temperature or at the local maximum monthly average temperature as reported by the National Weather Service for liquids stored or transferred at the ambient temperature, as determined:

(1) in accordance with methods described in American Petroleum Institute Publication 2517, Evaporative Loss From External Floating-Roof Tanks (incorporated by reference as specified in 63.14 of subpart A of this part 63); or
(2) as obtained from standard reference texts; or
(3) as determined by the American Society for Testing and Materials Method D2879-83 (incorporated by reference as specified in 63.14 of subpart A of this part); or
(4) any other method approved by the Administrator.

Partially soluble HAP means HAP listed in Table 7 of this subpart.

Point of determination (POD) means each point where process wastewater exits the miscellaneous coating operations.

Note to definition for point of determination: The regulation allows determination of the characteristics of a wastewater stream (1) at the point of determination or (2) downstream of the point of determination if corrections are made for changes in flow rate and annual average concentration of partially soluble and soluble HAP compounds as determined in 63.144. Such changes include losses by air emissions; reduction of annual average concentration or changes in flow rate by mixing with other water or wastewater streams; and reduction in flow rate or annual average concentration by treating or otherwise handling the wastewater stream to remove or destroy HAP.

Process vessel means any stationary or portable tank or other vessel with a capacity greater than or equal to 250 gal and in which mixing, blending, diluting, dissolving, temporary holding, and other processing steps occur in the manufacturing of a coating.

Process vessel vent means a vent from a process vessel or vents from multiple process vessels that are manifolded together into a common header, through which a HAP-containing gas stream is, or has the potential to be, released to the atmosphere. Emission streams that are undiluted and uncontrolled containing less than 50 ppmv HAP, as determined through process knowledge that no HAP are present in the emission stream or using an engineering assessment as discussed in 63.1257(d)(2)(ii), test data using Methods 18 of 40 CFR part 60, appendix A, or any other test method that has been validated according to the procedures in Method 301 of appendix A of this part, are not considered process vessel vents. Flexible elephant trunk systems when used with closed vent systems and draw ambient air (i.e., the system is not ducted, piped, or otherwise connected to the unit operations) away from operators when vessels are opened are not process vessel vents. Process vessel vents do not include vents on storage tanks, wastewater emission sources, or pieces of equipment subject to the requirements in Table 3 of this subpart. A gas stream going to a fuel gas system is not a process vessel vent. A gas stream routed to a process for a process purpose is not a process vessel vent.

A. State and Federally Enforceable Section (continued)

Recovery device, as used in the wastewater provisions, means an individual unit of equipment used for the purpose of recovering chemicals for fuel value (i.e., net positive heating value), use, reuse, or for sale for fuel value, use, or reuse. Examples of equipment that may be recovery devices include organic removal devices such as decanters, strippers, or thin-film evaporation units. To be a recovery device, a decanter and any other equipment based on the operating principle of gravity separation must receive only multi-phase liquid streams. A recovery device is considered part of the miscellaneous coating manufacturing operations.

Responsible official means responsible official as defined in 40 CFR 70.2.

Safety device means a closure device such as a pressure relief valve, frangible disc, fusible plug, or any other type of device which functions exclusively to prevent physical damage or permanent deformation to a unit or its air emission control equipment by venting gases or vapors directly to the atmosphere during unsafe conditions resulting from an unplanned, accidental, or emergency event. For the purposes of this subpart, a safety device is not used for routine venting of gases or vapors from the vapor headspace underneath a cover such as during filling of the unit or to adjust the pressure in response to normal daily diurnal ambient temperature fluctuations. A safety device is designed to remain in a closed position during normal operations and open only when the internal pressure, or another relevant parameter, exceeds the device threshold setting applicable to the air emission control equipment as determined by the owner or operator based on manufacturer recommendations, applicable regulations, fire protection and prevention codes and practices, or other requirements for the safe handling of flammable, combustible, explosive, reactive, or hazardous materials.

Shutdown means the cessation of operation of an affected source, any process vessels within an affected source, or equipment required or used to comply with this subpart if steps taken to cease operation differ from those under routine procedures for removing the vessel or equipment from service. Shutdown also applies to the emptying and degassing of storage tanks.

Small control device means a control device that controls total HAP emissions of less than 10 tpy, before control

Soluble HAP means the HAP listed in Table 8 of this subpart.

Startup means the setting in operation of a new affected source. For new equipment added to an affected source, including equipment required or used to comply with this subpart, startup means the first time the equipment is put into operation. Startup includes the setting in operation of equipment any time the steps taken differ from routine procedures for putting the equipment into operation.

Storage tank means a tank or other vessel that is used to store organic liquids that contain one or more HAP as raw material feedstocks or products. The following are not considered storage tanks for the purposes of this subpart:

(1) vessels permanently attached to motor vehicles such as trucks, railcars, barges, or ships;
(2) pressure vessels designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere;
(3) vessels storing organic liquids that contain HAP only as impurities;
(4) wastewater storage tanks; and
(5) process vessels.

Total organic compounds or (TOC) means the total gaseous organic compounds (minus methane and ethane) in a vent stream.

Wastewater storage tank means a stationary structure that is designed to contain an accumulation of wastewater and is constructed primarily of nonearthen materials (e.g., wood, concrete, steel, plastic) which provide structural support.

A. State and Federally Enforceable Section (continued)

Wastewater stream means water that is discarded from miscellaneous coating manufacturing operations through a POD, and that contains an annual average concentration of total partially soluble and soluble HAP compounds of at least 2,000 ppmw at any flow rate. For the purposes of this subpart, noncontact cooling water is not considered a wastewater stream.

Work practice standard means any design, equipment, work practice, or operational standard, or combination thereof, that is promulgated pursuant to section 112(h) of the Clean Air Act.

59. Tables to Subpart HHHHH of Part 63

The tables referenced in 40 CFR Part 63, Subpart HHHHH could not be incorporated directly into this permit. Therefore, the tables are included in Attachment 1 hereto, and are hereby incorporated into this permit as if fully rewritten.

Table 1 to Subpart HHHHH of Part 63 - Emission Limits and Work Practice Standards for Process Vessels
Table 2 to Subpart HHHHH of Part 63 - Emission Limits and Work Practice Standards for Storage Tanks
Table 3 to Subpart HHHHH of Part 63 - Requirements for Equipment Leaks
Table 4 to Subpart HHHHH of Part 63 - Emission Limits and Work Practice Standards for Wastewater Streams
Table 5 to Subpart HHHHH of Part 63 - Emission Limits and Work Practice Standards for Transfer Operations
Table 6 to Subpart HHHHH of Part 63 - Requirements for Heat Exchange Systems
Table 7 to Subpart HHHHH of Part 63 - Partially Soluble Hazardous Air Pollutants
Table 8 to Subpart HHHHH of Part 63 - Soluble Hazardous Air Pollutants
Table 9 to Subpart HHHHH of Part 63 - Requirements for Reports
Table 10 to Subpart HHHHH of Part 63 - Applicability of General Provisions to Subpart HHHHH

60. Table 1 to Subpart HHHHH of Part 63. Emission Limits and Work Practice Standards for Process Vessels (as required in Section 63.8005)--see Subpart HHHHH Tables attached to the end of this permit.

61. Table 2 to Subpart HHHHH of Part 63. Emission Limits for Storage Tanks (as required in Section 63.8010)--see Subpart HHHHH Tables attached to the end of this permit.

62. Table 3 to Subpart HHHHH of Part 63. Requirements for Equipment Leaks (as required in Section 63.8015)--see Subpart HHHHH Tables attached to the end of this permit.

63. Table 4 to Subpart HHHHH of Part 63. Emission Limits and Work Practice Standards for Wastewater Streams (as required in Section 63.8020)--see Subpart HHHHH Tables attached to the end of this permit.

64. Table 5 to Subpart HHHHH of Part 63. Emission Limits and Work Practice Standards for Transfer Operations (as required in Section 63.8025)--see Subpart HHHHH Tables attached to the end of this permit.

65. Table 6 to Subpart HHHHH of Part 63. Requirements for Heat Exchange Systems (as required in Section 63.8030)--see Subpart HHHHH Tables attached to the end of this permit.

A. State and Federally Enforceable Section (continued)

66. Table 7 to Subpart HHHHH of Part 63. Partially Soluble Hazardous Air Pollutants (as specified in Section 63.8020)--also see copy attached at the end of the permit.

Chemical name . . .	CAS No.
1. 1,1,1-Trichloroethane (methyl chloroform)	71556
2. 1,1,2,2-Tetrachloroethane	79345
3. 1,1,2-Trichloroethane	79005
4. 1,1-Dichloroethylene (vinylidene chloride)	75354
5. 1,2-Dibromoethane	106934
6. 1,2-Dichloroethane (ethylene dichloride)	107062
7. 1,2-Dichloropropane	78875
8. 1,3-Dichloropropene	542756
9. 2,4,5-Trichlorophenol	95954
10. 2-Butanone (MEK)	78933
11. 1,4-Dichlorobenzene	106467
12. 2-Nitropropane	79469
13. 4-Methyl-2-pentanone (MIBK)	108101
14. Acetaldehyde	75070
15. Acrolein	107028
16. Acrylonitrile	107131
17. Allyl chloride	107051
18. Benzene	71432
19. Benzyl chloride	100447
20. Biphenyl	92524
21. Bromoform (tribromomethane)	75252
22. Bromomethane	74839
23. Butadiene	106990
24. Carbon disulfide	75150
25. Chlorobenzene	108907
26. Chloroethane (ethyl chloride)	75003
27. Chloroform	67663
28. Chloromethane	74873
29. Chloroprene	126998
30. Cumene	98828
31. Dichloroethyl ether	111444
32. Dinitrophenol	51285
33. Epichlorohydrin	106898
34. Ethyl acrylate	140885
35. Ethylbenzene	100414
36. Ethylene oxide	75218
37. Ethylidene dichloride	75343
38. Hexachlorobenzene	118741
39. Hexachlorobutadiene	87683
40. Hexachloroethane	67721
41. Methyl methacrylate	80626
42. Methyl-t-butyl ether	1634044
43. Methylene chloride	75092
44. N-hexane	110543
45. N,N-dimethylaniline	121697
46. Naphthalene	91203
47. Phosgene	75445
48. Propionaldehyde	123386
49. Propylene oxide	75569
50. Styrene	100425

A. State and Federally Enforceable Section (continued)

51. Tetrachloroethylene (perchloroethylene) 79345
52. Tetrachloromethane (carbon tetrachloride) 56235
53. Toluene 108883
54. Trichlorobenzene (1,2,4-) 120821
55. Trichloroethylene 79016
56. Trimethylpentane 540841
57. Vinyl acetate 108054
58. Vinyl chloride 75014
59. Xylene (m) 108383
60. Xylene (o) 95476
61. Xylene (p) 106423

67. Table 8 to Subpart HHHHH of Part 63. Soluble Hazardous Air Pollutants(as specified in Section 63.8020)--also see copy attached at the end of the permit.

Chemical name . . . CAS No.
1. Acetonitrile 75058
2. Acetophenone 98862
3. Diethyl sulfate 64675
4. Dimethyl hydrazine (1,1) 58147
5. Dimethyl sulfate 77781
6. Dinitrotoluene (2,4) 121142
7. Dioxane (1,4) 123911
8. Ethylene glycol dimethyl ether
9. Ethylene glycol monobutyl ether acetate
10. Ethylene glycol monomethyl ether acetate
11. Isophorone 78591
12. Methanol 67561
13. Nitrobenzene 98953
14. Toluidine (o-) 95534
15. Triethylamine 121448

68. Table 9 to Subpart HHHHH of Part 63. Requirements for Reports [as required in Section 63.8075(a) and (b)]--see Subpart HHHHH Tables attached to the end of this permit.

A. State and Federally Enforceable Section (continued)

69. Table 10 to Subpart HHHHH of Part 63. Applicability of General Provisions to Subpart HHHHH (as specified in Section 63.8095)--also see copy attached at the end of the permit.

Citation Subject Explanation
63.1 Applicability Yes
63.2 Definitions Yes
63.3 Units and Abbreviations Yes
63.4 Prohibited Activities Yes
63.5 Construction/Reconstruction Yes
63.6(a) Applicability Yes
63.6(b)(1)-(4) Compliance Dates for New and Reconstructed sources Yes
63.6(b)(5) Notification Yes
63.6(b)(6) [Reserved]
63.6(b)(7) Compliance Dates for New and Reconstructed Area Sources That Become Major Yes
63.6(c)(1)-(2) Compliance Dates for Existing Sources Yes
63.6(c)(3)-(4) [Reserved]
63.6(c)(5) Compliance Dates for Existing Area Sources That Become Major Yes
63.6(d) [Reserved]
63.6(e)(1)-(2) Operation & Maintenance Yes
63.6(e)(3)(i), (ii), and (v) through (viii) SSMP Yes, except information regarding Group 2 emission points and equipment leaks is not required in the SSMP, as specified in 63.8080(f).
63.6(e)(3)(iii) and (iv) Recordkeeping and Reporting During Startup, Shutdown, and Malfunction (SSM) No, 63.998(d)(3) and 63.998(c)(1)(ii)(D) through (G) specify the recordkeeping requirement for SSM events, and ?63.8075(e)(5) specifies reporting requirements.
63.6(f)(1) Compliance Except During SSM Yes
63.6(f)(2)-(3) Methods for Determining Compliance Yes
63.6(g)(1)-(3) Alternative Standard Yes
63.6(h) Opacity/Visible Emission (VE) Standards Only for flares for which Method 22 observations are required as part of a flare compliance assessment.
63.6(i)(1)-(14) Compliance Extension Yes
63.6(j) Presidential Compliance Exemption Yes

A. State and Federally Enforceable Section (continued)

63.7(a)(1)-(2)□Performance Test Dates□Yes, except substitute 150 days for 180 days. 63.7(a)(3)□CAA Section 114 Authority□Yes, and this paragraph also applies to flare compliance assessments as specified under 63.997(b)(2).
63.7(b)(1)□Notification of Performance Test□Yes
63.7(b)(2)□Notification of Rescheduling□Yes
63.7(c)□Quality Assurance/Test Plan □Yes, except the test plan must be submitted with the notification of the performance test if the control device controls process vessels.
63.7(d)□Testing Facilities□Yes
63.7(e)(1)□Conditions for Conducting Performance Tests□Yes, except that performance tests for process vessels must be conducted under worst-case conditions as specified in 63.8005.
63.7(e)(2)□Conditions for Conducting Performance Tests□Yes
63.7(e)(3)□Test Run Duration□Yes
63.7(f)□Alternative Test Method□Yes
63.7(g)□Performance Test Data Analysis□Yes
63.7(h)□Waiver of Tests□Yes
63.8(a)(1)□Applicability of Monitoring Requirements□Yes
63.8(a)(2)□Performance Specifications□Yes
63.8(a)(3)□[Reserved]□
63.8(a)(4)□Monitoring with Flares□Yes
63.8(b)(1)□Monitoring□Yes
63.8(b)(2)-(3) Multiple Effluents and Multiple Monitoring Systems Yes
63.8(c)(1) Monitoring System Operation and Maintenance□Yes
63.8(c)(1)(i) Maintain and operate CMS□Yes
63.8(c)(1)(ii) Routine repairs□Yes
63.8(c)(1)(iii)□SSMP for CMS□Yes
63.8(c)(2)-(3)□Monitoring System Installation□Yes
63.8(c)(4)□ Requirements□Only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63. This subpart does not contain requirements for continuous opacity monitoring systems (COMS)
63.8(c)(4)(i)□CMS Requirements□No. This subpart does not require COMS.
63.8(c)(4)(ii)□CMS requirements□Yes
63.8(c)(5)□COMS Minimum Procedures□No. This subpart does not contain opacity or VE limits.
63.8(c)(6)□CMS Requirements□Only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.

A. State and Federally Enforceable Section (continued)

63.8(c)(7)-(8) CMS Requirements Only for CEMS. Requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63. 63.8(d) CMS Quality Control Only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
63.8(e) CMS Performance
Evaluation
Section 63.8(e)(6)(ii) does not apply because this subpart does not require COMS. Other sections apply only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
63.8(f)(1)-(5) Alternative
Monitoring
Method Yes, except you may also request approval using the precompliance report
63.8(f)(6) Alternative to
Relative Accuracy Test Only for CEMS.
63.8(g)(1)-(4) Data Reduction Only when using CEMS, except 63.8(g)(2) does not apply because data reduction requirements for CEMS are specified in 63.8000(d)(4)(iv). The requirements for COMS do not apply because this subpart has no opacity or VE limits.
63.8(g)(5) Data Reduction No. Requirements for CEMS are specified in 63.8000(d)(4). Requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
63.9(a) Notification
Requirements Yes
63.9(b)(1)-(5) Initial Notifications Yes
63.9(c) Request for
Compliance
Extension Yes
63.9(d) Notification of Special
Compliance
Requirements
for New Source Yes
63.9(e) Notification of Performance
Test Yes
63.9(f) Notification of VE/Opacity
Test No. This subpart does not contain opacity or VE limits.
63.9(g) Additional Notifications When Using CMS
Only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
63.9(h)(1)-(6) Notification of Compliance
Status
Yes, except this subpart has no opacity or VE limits, and 63.9(h)(2) does not apply because 63.8075(d) specifies the required contents and due date of the notification of compliance status report.

A. State and Federally Enforceable Section (continued)

63.9(i) Adjustment of Submittal Deadlines Yes 63.9(j) Change in Previous Information No, 63.8075(e)(8) specifies reporting requirements for process changes.
63.10(a) Recordkeeping/Reporting Yes
63.10(b)(1) Recordkeeping/Reporting Yes
63.10(b)(2)(i)-(iv) Records related to SSM No, 63.998(d)(3) and 63.998(c)(1)(ii)(D) through (G) specify recordkeeping requirements for periods of SSM.
63.10(b)(2)(iii) Records related to maintenance of air pollution control equipment Yes
63.10(b)(2)(vi), (x), and (xi) CMS Records Only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
63.10(b)(2)(vii)-(ix) Records Yes
63.10(b)(2)(xii) Records Yes
63.10(b)(2)(xiii) Records Yes.
63.10(b)(2)(xiv) Records Yes
63.10(b)(3) Records Yes
63.10(c)(1)-(6),(9)-(15) Records Only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
63.10(c)(7)-(8) Records No. Recordkeeping requirements are specified in 63.8080.
63.10(d)(1) General Reporting Requirements Yes
63.10(d)(2) Report of Performance Test Results Yes
63.10(d)(3) Reporting Opacity or VE Observations No. This subpart does not contain opacity or VE limits.
63.10(d)(4) Progress Reports Yes
63.10(d)(5)(i) SSM Reports No, 63.8075(e)(5) and (6) specify the SSM reporting requirements.
63.10(d)(5)(ii) Immediate SSM reports No
63.10(e)(1)-(2) Additional CMS Reports Only for CEMS, but 63.10(e)(2)(ii) does not apply because this subpart does not require COMS.
63.10(e)(3) Reports No. Reporting requirements are specified in 63.8075.
63.10(e)(3)(i)-(iii) Reports No. Reporting requirements are specified in ?63.8075
63.10(e)(3)(iv)-(v) Excess Emissions Reports No. Reporting requirements are specified in 63.8075

63.10(e)(3)(vi-viii) Excess Emissions Report and Summary Report No. Reporting requirements are specified in 63.8075?63.10(e)(4) Reporting COMS data No. This subpart does not contain opacity or VE limits.
63.10(f) Waiver for Recordkeeping/Reporting Yes
63.11 Flares Yes
63.12 Delegation Yes
63.13 Addresses Yes
63.14 Incorporation by Reference Yes
63.15 Availability of Information Yes

A. State and Federally Enforceable Section (continued)

100. The following insignificant emissions units are located at this facility:

B003 8.4 MMBtu/hr boiler; NG, #2 fuel oil, or LPG
B102 5.6 MMBtu/hr boiler; NG or #2 fuel oil
B103 8.4 MMBtu/hr boiler No.1 -polymer division; NG, #2 fuel oil, or LPG
L001 maintenance metal parts washer (permit to install 01-3623)
P032 R&D sawroom (permit to install 01-2584)
P033 portable pump #1 (permit to install 01-3623)
P034 portable pump #2 (permit to install 01-3623)
P035 portable pump #3 (permit to install 01-3623)
P038 welding bench (permit to install 01-3623)
P112 reactor 3-S system; emulsion polymerization process for adhesives
P126 R&D polyurethane prepolymer reactor; 200 gal. (permit to install 01-7879)
T020 tank #16 Duracet 110 agitated storage tank, stainless steel, 6,500 gal. (permit to install 01-2533)
T021 tank #13 product storage tank, steel, 6,640 gal. (permit to install 01-1812)
T022 tank #2 product storage tank, steel, 4,500 gal. (permit to install 01-1812)
T023 tank #4 product storage tank, steel, 10,000 gal. (permit to install 01-1812)
T024 tank #3 product storage tank, steel, 10,000 gal. (permit to install 01-1812)
T025 tank #5 product storage tank, steel, 10,000 gal (permit to install 01-1812)
T026 tank #7 product storage tank, steel, 10,000 gal (permit to install 01-1812)
T027 tank #17 Duracet 110 polyvinyl acetate emulsion storage tank, fiberglass, 6,875 gal. (permit to install 01-2533)
T028 tank #11 product storage tank, 6,251 gal. (permit to install 01-2777)
T029 tank #6 product storage tank, stainless steel, 5,952 gal. (permit to install 01-2777)
T030 tank #15 product storage tank, stainless steel, 5,085 gal. (permit to install 01-2777)
T031 V42 agitated storage tank, stainless steel, 10,000 gallon (permit to install 01-4445)
T032 acetone storage tank, stainless steel UST, 12,000 gal., installed 1/96
T033 hexane storage tank, stainless steel UST, 12,000 gal. (permit to install 01-6037)

101. T034 toluene storage tank, stainless steel UST, 12,000 gal. (permit to install 01-6037)
T120 V28 storage tank, stainless steel, 6,000 gal. (permit to install 01-1353)
T121 V29 storage tank, stainless steel, 6,000 gal. (permit to install 01-1353)
T122 V30 storage tank, stainless steel, 6,000 gal. (permit to install 01-1353)
T126 cymel storage tank, fiberglass, 3,000 gal. (permit to install 01-1544)
T127 V46 agitated storage tank, 10,000 gal. (permit to install 01-1893)
T128 V47 agitated storage tank, 10,000 gal. (permit to install 01-1893)
T129 V48 agitated storage tank, 10,000 gal. (permit to install 01-1893)
T130 V49 agitated storage tank, 10,000 gal. (permit to install 01-1893)
T131 V51 agitated storage tank, 10,000 gal. (permit to install 01-1893)
T132 V52 agitated storage tank, 10,000 gal. (permit to install 01-1893)
T133 V53 agitated storage tank, 10,000 gal. (permit to install 01-1893)
T134 V54 agitated storage tank, 10,000 gal. (permit to install 01-1893)
T135 vinyl acetate storage tank, stainless steel UST, 25,000 gal. (permit to install 01-6009)
T136 vinyl acetate storage tank, stainless steel UST, 25,000 gal. (permit to install 01-6009)
T137 vinyl acetate storage tank, stainless steel UST, 25,000 gal. (permit to install 01-6009)
T138 vinyl acetate storage tank, stainless steel UST, 25,000 gal. (permit to install 01-6009)
T139 butyl acrylate storage tank, stainless steel UST, 20,000 gal. (permit to install 01-6009)
T140 butyl acrylate storage tank, stainless steel UST, 20,000 gal. (permit to install 01-6009)
T141 2-ethylhexyl acrylate storage tank, stainless steel UST, 30,000 gal. (permit to install 01-6009)
T142 methyl methacrylate storage tank, stainless steel UST, 12,000 gal. (permit to install 01-6009)
T143 isobutyl acrylate storage tank, stainless steel UST, 12,000 gal. (permit to install 01-6009)

A. State and Federally Enforceable Section (continued)

102. Z009 raw material bulk handling (construction), pneumatic conveying system
Z010 BP raw material bulk handling, pneumatic conveying system
Z011 Swerdtel caulk tube packaging line
Z013 charge can for urethane adhesives, 1,000 gal.
Z014 Voranol storage tank for polyether polyols, 10,000 gal.
Z015 Voranol storage tank for polyether polyols, 10,000 gal.
Z016 DOTP plasticizer storage tank, 10,000 gal.
Z017 MDI storage tank, 10,000 gal.
Z018 mineral spirits storage tank, 10,000 gal.
Z020 raw material bulk handling, pneumatic conveying system
Z021 V55 storage/mixing tank; for water based adhesives, 10,000 gal.
Z026 resin heaters, electric drum heaters for water based carpet adhesive
Z027 high speed dispensing tanks, mix and heat resin/oil for water based carpet adhesive
Z028 high speed blenders, mix water based carpet adhesive
Z029 Ross 5 mixer, water based carpet adhesive mixer
Z031 Reynolds 1, water based adhesive mixer
Z100 emergency generator 150 KW
Z101 emergency generator 250 KW
Z102 emergency generator 350 KW
Z103 8.4 MMBtu/hr boiler No.3, NG or fuel oil
Z200 corn starch unloading area

Each insignificant emissions unit at this facility must comply with all applicable State and federal regulations, as well as any emission limitations and/or control requirements contained within the identified permit to install for the emissions unit. Insignificant emissions units listed above that are not subject to specific permit to install requirements are subject to one or more applicable requirements contained in the SIP-approved versions of OAC Chapters 3745-17, 3745-18, and 3745-21.

B. State Only Enforceable Section

1. The following insignificant emissions units located at this facility are exempt from permit requirements because they are not subject to any applicable requirements or because they meet the "de minimis" criteria established in OAC rule 3745-15-05:

P001 kettle 2 water-based adhesive mixing tank
P009 kettle 3 water-based adhesive mixing tank
P010 kettle 4 water-based adhesive mixing tank
P011 kettle 5 water-based adhesive mixing tank
P012 kettle 6 water-based adhesive mixing tank
P013 kettle 7 water-based adhesive mixing tank
P014 kettle 8 water-based adhesive mixing tank
P015 kettle 9 water-based adhesive mixing tank
P017 kettle 11 water-based adhesive mixing tank
P018 kettle 12 water-based adhesive mixing tank
P019 kettle 13 water-based adhesive mixing tank
T001 n-propyl bromide/solvent stainless steel storage tank, 12,000 gal., installed 6/69
T002 west fuel oil storage tank, fiberglass UST, 20,000 gal., installed 6/69
T003 east fuel oil storage tank, fiberglass UST, 20,000 gal., installed 6/75
T006 tank #14 product storage tank, stainless steel, 6,640 gal.
T007 tank #12 product storage tank, stainless steel, 6,640 gal.
T009 benzoflex/santicizer tank, 1,600 gal.
T012 tank #8 product storage tank, stainless steel, 2,200 gal.
T014 tank #9 product storage tank, stainless steel, 2,200 gal.
T015 tank #10 product storage tank, stainless steel, 4,500 gal.
T105 aqueous acrylamide tank, stainless steel, 5,700 gal.
T106 n-methyolacrylamide tank, stainless steel, 5,700 gal.
T113 VV-10 storage tank, 6,000 gal.
T116 fuel oil storage tank, fiberglass, 10,000 gal., installed 6/75
T123 V43 agitated storage tank, stainless steel, 10,000 gal., installed 1/87
T124 V44 agitated storage tank, stainless steel, 10,000 gal., installed 2/87
T125 V45 agitated storage tank, stainless steel, 10,000 gal., installed 2/87

Z001 hogger-grinder, rubber chunks
Z002 filler dryer, steam heated
Z004 R&D Littleford mixer
Z005 R&D Myers mixer
Z006 R&D Ross mixer
Z007 BP reactor, 1,800 gal.
Z008 Benzoflex Tank, 6,800 gal.
Z019 Prosys 3 package line, caulk tube packaging
Z022 Igepal storage tank, 6,000 gal.
Z023 Aquatac storage tanks (2), 6,000 gal. each
Z024 latex slurry tank, for water based carpet adhesive
Z025 clay slurry tanks (2), for water based carpet adhesive
Z030 carpet adhesive packaging line
Z032 Prosys 4, solvent based products packaging line
Z033 Prosys 5, solvent based products packaging line
Z034 Prosys 2-BP, polyurethane adhesives packaging line
Z035 Shellflex storage tank, 7,800 gal.
*Z036 Cleanup materials
Z105 acrylic acid tank, 6,000 gal.
Z108 product storage tanks (several), water based adhesives
Z109 formulation tanks (several), water based adhesives

* Cleanup materials include a petroleum based solvent and hexane. Conservative estimates of facility wide cleanup emissions do not exceed 550 pounds per year.

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Nauta 1 Mixer (P002)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Nauta #1 mixer	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.b and A.I.2.c.)

2. Additional Terms and Conditions

2.a This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

2.b The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.1. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Nauta 2 Mixer (P003)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Nauta #2 mixer	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.b and A.I.2.c.)

2. Additional Terms and Conditions

2.a This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

2.b The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.1. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Ross # 2 Mixer (P004)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Ross #2 mixer with condenser	OAC rule 3745-31-05(A)(3), (PTI 01-05686)	Organic compound (OC) emissions shall not exceed 6.5 lbs/hr and 32.6 lbs/day. There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emissions unit or from the room containing the unit, during the addition of solids. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-17-07(B)(1)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The permittee shall not operate this emissions unit without the use of the condenser and it shall be operated as required in Section A.II.1.

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2. Additional Terms and Conditions (continued)

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.5. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

2.d This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

II. Operational Restrictions

1. The permittee shall maintain the following conditions for the condenser serving this emissions unit:

a. a continuous temperature monitor shall be operated and maintained at a point where the chilled water is returned from the mixers, and prior to the chiller, to document the outlet temperature of the condenser for the calculation of the condenser efficiency (Section A.V.2); and

b. if the temperature of the chilled water leaving the condenser serving the mix tank exceeds 18 degrees Celsius at any time, and if a control efficiency is applied to document emissions, the adjusted control efficiency shall be calculated as required in section A.V.2 for each such batch and the existing record of representative emissions maintained for the product batch shall not be used.

2. The pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, syrup, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the mixer (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the uncontrolled and controlled emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total uncontrolled and controlled OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

III. Monitoring and/or Record Keeping Requirements (continued)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the mixer, to be used as the vapor inlet temperature; and a record of the conservative average condenser water outlet temperature, measured after the mixer, prior to the chiller, to be used to calculate the vapor outlet temperature in the control efficiency calculation (Section A.V.2), where it shall be assumed that the vapor outlet temperature is 2.5 degrees Celsius higher that the chiller water temperature leaving the mixer;

i. the total controlled (if condenser fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser, or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

j. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the mixer condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, syrup, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Section A.III.1.i) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water leaving the condenser serving the mix tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information for each product batch:

a. the computer record of the continuous temperature monitor which shall document the temperature of the chilled water leaving the condenser serving the mix tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the condenser, its temperature control device, monitoring equipment, and the mix tank, for each product batch; and

c. for any batch in which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

5. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

6. The permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

7. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-05686, issued on 8/30/01: Sections A.III.1 through A.III.6. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 6.5 pounds per hour, and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the daily organic compound emissions exceeded 32.6 pounds per day, and the actual organic compound emissions for each such day.

2. The permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

4. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

5. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-05686, issued on 8/30/01: Sections A.IV.1 through A.IV.4. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 6.5 lbs/hr and 32.6 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)] x % saturation*

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)] x % saturation*

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from mixing (friction). The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to mixing heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

*The % saturation shall never be less than 60% and/or shall be adjusted with the most current and worst-case testing results, by product group and highest concentration of the volatile components. The % saturation shall not be used if a nitrogen purge is applied; and 80% saturation (worst-case) shall be used for all product groups not tested for the saturation level of the compound in the vapor space, unless it can be demonstrated that the saturation point is lower.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

V. Testing Requirements (continued)

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser outlet water temperature (measured after the mix tanks, prior to the chiller) for each product, or worst-case product. It shall be assumed that the vapor outlet temperature is 2.5 degrees (Celsius) higher than the outlet water temperatures of the condenser, as measured by the continuous temperature monitor installed following the mixer(s), prior to the chiller. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch.

**Vapor outlet temperature of the condenser shall be measured from the returning chilled water, after the mixers, but before the chiller, with 2.5 degrees Celsius added to adjust for the water to vapor temperatures.

For the purpose of calculating annual emissions, the control efficiency for each product or product type mixed during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the mixer, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the mixer is routed to the condenser.

V. Testing Requirements (continued)

4. Emission Limitation:
There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

5. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-05686, issued on 8/30/01: Sections A.V.1 through A.V.4. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Ross #2 mixer with condenser		

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (Ross #2 mixer) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutants:

Pollutant: Acetone

TLV: 1,188 mg/m3

Maximum Hourly Emission Rate: 6.5 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 3,193 ug/m3

MAGLC: 28,286 ug/m3

Pollutant: Hexane

TLV: 176 mg/m3

Maximum Hourly Emission Rate: 6.5 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 3,193 ug/m3

MAGLC: 4,190 ug/m3

Pollutant: Toluene

TLV: 188 mg/m3

Maximum Hourly Emission Rate: 6.5 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 3,193 ug/m3

MAGLC: 4,476 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Littleford # 1 Mixer (P005)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Littleford #1 mixer with condenser	OAC rule 3745-31-05(A)(3), (PTI 01-05686)	Organic compound (OC) emissions shall not exceed 6.4 lbs/hr and 31.9 lbs/day. There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emissions unit or from the room containing the unit, during the addition of solids. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-17-07(B)(1)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The permittee shall not operate this emissions unit without the use of the condenser and it shall be operated as required in Section A.II.1.

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2. Additional Terms and Conditions (continued)

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.5. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

2.d This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

II. Operational Restrictions

1. The permittee shall maintain the following conditions for the condenser serving this emissions unit:

a. a continuous temperature monitor shall be operated and maintained at a point where the chilled water is returned from the mixers, and prior to the chiller, to document the outlet temperature of the condenser for the calculation of the condenser efficiency (Section A.V.2); and

b. if the temperature of the chilled water leaving the condenser serving the mix tank exceeds 18 degrees Celsius at any time, and if a control efficiency is applied to document emissions, the adjusted control efficiency shall be calculated as required in section A.V.2 for each such batch and the existing record of representative emissions maintained for the product batch shall not be used.

2. The pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, syrup, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the mixer (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the uncontrolled and controlled emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total uncontrolled and controlled OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

III. Monitoring and/or Record Keeping Requirements (continued)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the mixer, to be used as the vapor inlet temperature; and a record of the conservative average condenser water outlet temperature, measured after the mixer, prior to the chiller, to be used to calculate the vapor outlet temperature in the control efficiency calculation (Section A.V.2), where it shall be assumed that the vapor outlet temperature is 2.5 degrees Celsius higher that the chiller water temperature leaving the mixer;

i. the total controlled (if condenser fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser, or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

j. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the mixer condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, syrup, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batchs calculated using one of the following methods:

i. product batch(s) is/are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Section A.III.1.i) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water leaving the condenser serving the mix tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information for each product batch:

a. the computer record of the continuous temperature monitor which shall document the temperature of the chilled water leaving the condenser serving the mix tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the condenser, its temperature control device, monitoring equipment, and the mix tank, for each product batch; and

c. for any batch in which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

5. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

6. The permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

7. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-05686, issued on 8/30/01: Sections A.III.1 through A.III.6. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 6.4 pounds per hour, and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the daily organic compound emissions exceeded 31.9 pounds per day, and the actual organic compound emissions for each such day.

2. The permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

4. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

5. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-05686, issued on 8/30/01: Sections A.IV.1 through A.IV.4. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 6.4 lbs/hr and 31.9 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)] x % saturation*

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)] x % saturation*

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from mixing (friction). The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to mixing heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

*The % saturation shall never be less than 60% and/or shall be adjusted with the most current and worst-case testing results, by product group and highest concentration of the volatile components. The % saturation shall not be used if a nitrogen purge is applied; and 80% saturation (worst-case) shall be used for all product groups not tested for the saturation level of the compound in the vapor space, unless it can be demonstrated that the saturation point is lower.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

V. Testing Requirements (continued)

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser outlet water temperature (measured after the mix tanks, prior to the chiller) for each product, or worst-case product. It shall be assumed that the vapor outlet temperature is 2.5 degrees (Celsius) higher than the outlet water temperatures of the condenser, as measured by the continuous temperature monitor installed following the mixer(s), prior to the chiller. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch.

**Vapor outlet temperature of the condenser shall be measured from the returning chilled water, after the mixers, but before the chiller, with 2.5 degrees Celsius added to adjust for the water to vapor temperatures.

For the purpose of calculating annual emissions, the control efficiency for each product or product type mixed during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the mixer, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the mixer is routed to the condenser.

V. Testing Requirements (continued)

4. Emission Limitation:
There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

5. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-05686, issued on 8/30/01: Sections A.V.1 through A.V.4. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Littleford #1 mixer with condenser		

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (Littleford #1 mixer) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutants:

Pollutant: Acetone

TLV: 1,188 mg/m3

Maximum Hourly Emission Rate: 6.4 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 2,465 ug/m3

MAGLC: 28,286 ug/m3

Pollutant: Hexane

TLV: 176 mg/m3

Maximum Hourly Emission Rate: 6.4 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 2,465 ug/m3

MAGLC: 4,190 ug/m3

Pollutant: Toluene

TLV: 188 mg/m3

Maximum Hourly Emission Rate: 6.4 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 2,465 ug/m3

MAGLC: 4,476 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Ross # 3 Mixer (P006)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Ross #3 mixer	OAC rule 3745-31-05(A)(3), (PTI 01-08401)	Organic compound (OC) emissions shall not exceed 7.3 tons/yr. There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emissions unit or from the room containing the unit, during the addition of solids. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-17-07(B)(1)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a If the permittee applies the condenser's control efficiency to calculate emissions from the product batches, the condenser shall be operated as required in Section A.II.1.

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2. Additional Terms and Conditions (continued)

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.5. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

2.d This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

II. Operational Restrictions

1. If the permittee applies the condenser's control efficiency for the purpose of calculating annual emissions, the following conditions must be met:

a. a continuous temperature monitor shall be operated and maintained at a point where the chilled water is returned from the mixers, and prior to the chiller, to document the outlet temperature of the condenser for the calculation of the condenser efficiency (Section A.V.2); and

b. if the temperature of the chilled water leaving the condenser serving the mix tank exceeds 18 degrees Celsius at any time, and if a control efficiency is applied to document emissions, the adjusted control efficiency shall be calculated as required in section A.V.2 for each such batch and the existing record of representative emissions maintained for the product batch shall not be used.

2. If the permittee applies the condenser's control efficiency for the purpose of calculating annual emissions, the pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information at the end of each month for the purpose of demonstrating compliance with the annual emission limitation in Section A.I.1 or for the purpose of calculating annual emissions:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, syrup, or other product processed during the month;

b. a record of the total number of batches of each said product, as grouped*, and the mass emission rate, in pounds per batch, of each product or product group that was applied to calculate (as below) each product or product group's emissions;

c. the total actual (controlled** and/or uncontrolled) OC emissions from all product batches produced, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency for each organic chemical component contained in each product batch/batch group and at each method of loss, using one of the following methods:

i. product batch(s) is/are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.2;

ii. product batch(s) is/are individually calculated because an existing record does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.2);

d. the total actual (controlled and/or uncontrolled) OC emissions from all product batches produced duing the month.

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

* Products may be grouped by similar product types (same chemical components and having similar concentrations) for monthly emissions estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the mixer condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of batch emissions, unless products are calculated individually.

** The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1 for each product or product batch group, may be added for each month to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

2. If emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining emission calculations for each individual batch:

a. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

b. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

c. records to document the value of each conservatively estimated and/or worst-case variable* for each product or product group;

d. the uncontrolled and controlled (where applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented above) are applied and calculated as required in Section A.V.1 and A.V.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch); and

e. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions determined above, for this emissions unit or an emissions unit with a greater volume.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record for each product or product group to which they could be applied.

3. If the condenser is used to demonstrate compliance with the annual emission limitation in Section A.I.1, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water leaving the condenser serving the mix tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

For those batches in which the condenser is used to demonstrate compliance, the permittee shall collect and maintain the following information for each such batch:

a. the computer record of the continuous temperature monitor which shall document the temperature of the chilled water leaving the condenser serving the mix tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the condenser, its temperature control device, monitoring equipment, and the mix tank, for each product batch; and

c. for any batch in which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section A.V.2.

III. Monitoring and/or Record Keeping Requirements (continued)

4. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report and for demonstrating compliance with the annual emission limitation in Section A.I.1:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the monthly OC emissions from Section A.III.1.d, for the calendar year.

5. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

6. If the condenser's control efficiency is used for the purpose of calculating annual emissions, the permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

7. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-08401, issued on 12/1/01: Sections A.III.1 through A.III.6. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. If the permittee applies the condenser's control efficiency to calculate emissions from this emissons unit, for those batches in which the condenser is used to demonstrate compliance the permittee shall submit quarterly temperature deviation (excursion) reports for each such batch, that identify all periods of time during which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

IV. Reporting Requirements (continued)

3. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-08401, issued on 12/1/01: Sections A.IV.1 through A.IV.2. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the annual emission limitation shall be documented with the submission of the annual fee emissions report and emissions shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 7.3 tons/yr.

Applicable Compliance Method:
a. Compliance with the annual OC emission limitation shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2, as the sum of each month's OC emissions for the calendar year.

b. Emissions from each batch or batch group shall be based on the following calculations:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$Pi = A - B/(C+T)$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$Yi = Pi / Pt = XiPi^*/ Pt$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)] x % saturation*

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)] x % saturation*

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from mixing (friction). The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to mixing heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

*The % saturation shall never be less than 60% and/or shall be adjusted with the most current and worst-case testing results, by product group and highest concentration of the volatile components. The % saturation shall not be used if a nitrogen purge is applied; and 80% saturation (worst-case) shall be used for all product groups not tested for the saturation level of the compound in the vapor space, unless it can be demonstrated that the saturation point is lower.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

V. Testing Requirements (continued)

2. If the condenser's control efficiency is used in the calculation of emissions, it shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser outlet water temperature (measured after the mix tanks, prior to the chiller) for each product, or worst-case product. It shall be assumed that the vapor outlet temperature is 2.5 degrees (Celsius) higher than the outlet water temperatures of the condenser, as measured by the continuous temperature monitor installed following the mixer(s), prior to the chiller. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch.

**Vapor outlet temperature of the condenser shall be measured from the returning chilled water, after the mixers, but before the chiller, with 2.5 degrees Celsius added to adjust for the water to vapor temperatures.

For the purpose of calculating annual emissions, the control efficiency for each product or product type mixed during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the mixer, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. Emission Limitation:
There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

V. Testing Requirements (continued)

4. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-08401, issued on 12/1/01: Sections A.V.1 through A.V.3. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Ross #3 mixer		

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (Ross Mixer #3) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutants:

Pollutant: Acetone

TLV: 1,188 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 4,103 ug/m3

MAGLC: 28,286 ug/m3

Pollutant: Hexane

TLV: 176 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 4,103 ug/m3

MAGLC: 4,190 ug/m3

Pollutant: Toluene

TLV: 188 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 4,103 ug/m3

MAGLC: 4,476 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Littleford # 4 Mixer (P007)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Littleford #4 mixer	OAC rule 3745-31-05(A)(3), (PTI 01-06087)	Organic compound (OC) emissions shall not exceed 7.7 lbs/hr, 38.5 lbs/day, and 7.0 tons/yr. There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emissions unit or from the room containing the unit, during the addition of solids. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-17-07(B)(1)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a If the permittee applies the condenser's control efficiency to calculate emissions from the product batches, the condenser shall be operated as required in Section A.II.1.

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2. Additional Terms and Conditions (continued)

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.5. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

2.d This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

II. Operational Restrictions

1. If the permittee applies the condenser's control efficiency to comply with the emission limitations in Section A.I.1 or for the purpose of calculating annual emissions, the following conditions must be met:

a. a continuous temperature monitor shall be operated and maintained at a point where the chilled water is returned from the mixers, and prior to the chiller, to document the outlet temperature of the condenser for the calculation of the condenser efficiency (Section A.V.2); and

b. if the temperature of the chilled water leaving the condenser serving the mix tank exceeds 18 degrees Celsius at any time, and if a control efficiency is applied to document emissions, the adjusted control efficiency shall be calculated as required in section A.V.2 for each such batch and the existing record of representative emissions maintained for the product batch shall not be used.

2. If the permittee applies the condenser's control efficiency for the purpose of calculating annual emissions, the permittee shall perform annual inspections to ensure that the conservation vents are clean and unobstructed.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, syrup, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the mixer (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the uncontrolled and controlled (if applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

III. Monitoring and/or Record Keeping Requirements (continued)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if a control efficiency is applied and if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the mixer, to be used as the vapor inlet temperature; and a record of the conservative average condenser water outlet temperature, measured after the mixer, prior to the chiller, to be used to calculate the vapor outlet temperature in the control efficiency calculation (Section A.V.2), where it shall be assumed that the vapor outlet temperature is 2.5 degrees Celsius higher that the chiller water temperature leaving the mixer;

i. the total controlled (if condenser fully operational and used for compliance) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser, or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

j. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the mixer condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, syrup, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Section A.III.1.i) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. If the condenser is used to demonstrate compliance with the allowable limits in Section A.I.1, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water leaving the condenser serving the mix tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

For those batches in which the condenser is used to demonstrate compliance, the permittee shall collect and maintain the following information for each such batch:

a. the computer record of the continuous temperature monitor which shall document the temperature of the chilled water leaving the condenser serving the mix tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the condenser, its temperature control device, monitoring equipment, and the mix tank, for each product batch; and

c. for any batch in which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report and for demonstrating compliance with the annual emission limitation in Section A.I.1:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

5. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

6. If the condenser's control efficiency is used for the purpose of calculating annual emissions, the permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

7. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-06087, issued on 11/20/01: Sections A.III.1 through A.III.6. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 7.7 pounds per hour, and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the daily organic compound emissions exceeded 38.5 pounds per day, and the actual organic compound emissions for each such day.

2. If the permittee applies the condenser's control efficiency to calculate emissions from this emissons unit, for those batches in which the condenser is used to demonstrate compliance the permittee shall submit quarterly temperature deviation (excursion) reports for each such batch, that identify all periods of time during which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

4. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

5. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-06087, issued on 11/20/01: Sections A.IV.1 through A.IV.4. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 7.7 lbs/hr and 38.5 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)] x % saturation*

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)] x % saturation*

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from mixing (friction). The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to mixing heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

*The % saturation shall never be less than 60% and/or shall be adjusted with the most current and worst-case testing results, by product group and highest concentration of the volatile components. The % saturation shall not be used if a nitrogen purge is applied; and 80% saturation (worst-case) shall be used for all product groups not tested for the saturation level of the compound in the vapor space, unless it can be demonstrated that the saturation point is lower.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

V. Testing Requirements (continued)

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser outlet water temperature (measured after the mix tanks, prior to the chiller) for each product, or worst-case product. It shall be assumed that the vapor outlet temperature is 2.5 degrees (Celsius) higher than the outlet water temperatures of the condenser, as measured by the continuous temperature monitor installed following the mixer(s), prior to the chiller. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch.

**Vapor outlet temperature of the condenser shall be measured from the returning chilled water, after the mixers, but before the chiller, with 2.5 degrees Celsius added to adjust for the water to vapor temperatures.

For the purpose of calculating annual emissions, the control efficiency for each product or product type mixed during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the mixer, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. Emission Limitation:
Organic compound emissions shall not exceed 7.0 tons/yr.

Applicable Compliance Method:
Compliance shall be demonstrated through the calculations and record keeping requirements found in this permit and with the submission of the annual Fee Emission Report, Section A.III.4. The permittee may demonstrate compliance through the use of the condenser control by applying the estimated efficiency, calculated as required in Section A.V.2.

V. Testing Requirements (continued)

4. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the mixer is routed to the condenser.

5. Emission Limitation:
There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-06087, issued on 11/20/01: Sections A.V.1 through A.V.5. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Littleford #4 mixer		

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (Littleford #4 mixer) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant:

Pollutant: 1,1,1-Trichloroethane

TLV: 1,910 mg/m3

Maximum Hourly Emission Rate: 7.70 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 2,953 ug/m3

MAGLC: 45,476 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Nauta 3 Mixer (P020)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Nauta #3 mixer	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.b and A.I.2.c.)

2. Additional Terms and Conditions

2.a This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

2.b The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.1. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Nauta 5 Mixer (P021)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Nauta #5 mixer	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.b and A.I.2.c.)

2. Additional Terms and Conditions

2.a This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

2.b The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.1. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Mixer 1 (P022)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Mixer #1	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.b and A.I.2.c.)

2. Additional Terms and Conditions

2.a This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

2.b The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.1. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Mixer 2 (P023)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Mixer #2	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.b and A.I.2.c.)

2. Additional Terms and Conditions

2.a This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

2.b The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.1. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Mixer 3 (P024)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Mixer #3	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.b and A.I.2.c.)

2. Additional Terms and Conditions

2.a This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

2.b The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.1. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Mixer 5 (P026)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Mixer #5	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.b and A.I.2.c.)

2. Additional Terms and Conditions

2.a This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

2.b The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.1. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Mixer 11 (P027)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Mixer #11	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.b and A.I.2.c.)

2. Additional Terms and Conditions

2.a This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

2.b The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.1. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Mixer 12 (P028)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Mixer #12	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.b and A.I.2.c.)

2. Additional Terms and Conditions

2.a This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

2.b The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.1. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Myers 1 (P029)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Myers 1 mixer	OAC rule 3745-31-05(A)(3), (PTI 01-08401)	Organic compound (OC) emissions shall not exceed 7.3 tons/yr. There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emissions unit or from the room containing the unit, during the addition of solids. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-17-07(B)(1)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a If the permittee applies the condenser's control efficiency to calculate emissions from the product batches, the condenser shall be operated as required in Section A.II.1.

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2. Additional Terms and Conditions (continued)

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.5. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

2.d This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

II. Operational Restrictions

1. If the permittee applies the condenser's control efficiency for the purpose of calculating annual emissions, the following conditions must be met:

a. a continuous temperature monitor shall be operated and maintained at a point where the chilled water is returned from the mixers, and prior to the chiller, to document the outlet temperature of the condenser for the calculation of the condenser efficiency (Section A.V.2); and

b. if the temperature of the chilled water leaving the condenser serving the mix tank exceeds 18 degrees Celsius at any time, and if a control efficiency is applied to document emissions, the adjusted control efficiency shall be calculated as required in section A.V.2 for each such batch and the existing record of representative emissions maintained for the product batch shall not be used.

2. If the permittee applies the condenser's control efficiency for the purpose of calculating annual emissions, the pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information at the end of each month for the purpose of demonstrating compliance with the annual emission limitation in Section A.I.1 or for the purpose of calculating annual emissions:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, syrup, or other product processed during the month;

b. a record of the total number of batches of each said product, as grouped*, and the mass emission rate, in pounds per batch, of each product or product group that was applied to calculate (as below) each product or product group's emissions;

c. the total actual (controlled** and/or uncontrolled) OC emissions from all product batches produced, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency for each organic chemical component contained in each product batch/batch group and at each method of loss, using one of the following methods:

i. product batch(s) is/are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.2;

ii. product batch(s) is/are individually calculated because an existing record does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.2);

d. the total actual (controlled and/or uncontrolled) OC emissions from all product batches produced duing the month.

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

* Products may be grouped by similar product types (same chemical components and having similar concentrations) for monthly emissions estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the mixer condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of batch emissions, unless products are calculated individually.

** The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1 for each product or product batch group, may be added for each month to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

2. If emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining emission calculations for each individual batch:

a. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

b. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

c. records to document the value of each conservatively estimated and/or worst-case variable* for each product or product group;

d. the uncontrolled and controlled (where applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented above) are applied and calculated as required in Section A.V.1 and A.V.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch); and

e. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions determined above, for this emissions unit or an emissions unit with a greater volume.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record for each product or product group to which they could be applied.

3. If the condenser is used to demonstrate compliance with the annual emission limitation in Section A.I.1, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water leaving the condenser serving the mix tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

For those batches in which the condenser is used to demonstrate compliance, the permittee shall collect and maintain the following information for each such batch:

a. the computer record of the continuous temperature monitor which shall document the temperature of the chilled water leaving the condenser serving the mix tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the condenser, its temperature control device, monitoring equipment, and the mix tank, for each product batch; and

c. for any batch in which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section A.V.2.

III. Monitoring and/or Record Keeping Requirements (continued)

4. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report and for demonstrating compliance with the annual emission limitation in Section A.I.1:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the monthly OC emissions from Section A.III.1.d, for the calendar year.

5. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

6. If the condenser's control efficiency is used for the purpose of calculating annual emissions, the permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

7. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-08401, issued on 12/1/01: Sections A.III.1 through A.III.6. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. If the permittee applies the condenser's control efficiency to calculate emissions from this emissons unit, for those batches in which the condenser is used to demonstrate compliance the permittee shall submit quarterly temperature deviation (excursion) reports for each such batch, that identify all periods of time during which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

IV. Reporting Requirements (continued)

3. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-08401, issued on 12/1/01: Sections A.IV.1 through A.IV.2. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the annual emission limitation shall be documented with the submission of the annual fee emissions report and emissions shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 7.3 tons/yr.

Applicable Compliance Method:
a. Compliance with the annual OC emission limitation shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2, as the sum of each month's OC emissions for the calendar year.

b. Emissions from each batch or batch group shall be based on the following calculations:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)] x % saturation*

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)] x % saturation*

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from mixing (friction). The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to mixing heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

*The % saturation shall never be less than 60% and/or shall be adjusted with the most current and worst-case testing results, by product group and highest concentration of the volatile components. The % saturation shall not be used if a nitrogen purge is applied; and 80% saturation (worst-case) shall be used for all product groups not tested for the saturation level of the compound in the vapor space, unless it can be demonstrated that the saturation point is lower.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

V. Testing Requirements (continued)

2. If the condenser's control efficiency is used in the calculation of emissions, it shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser outlet water temperature (measured after the mix tanks, prior to the chiller) for each product, or worst-case product. It shall be assumed that the vapor outlet temperature is 2.5 degrees (Celsius) higher than the outlet water temperatures of the condenser, as measured by the continuous temperature monitor installed following the mixer(s), prior to the chiller. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch.

**Vapor outlet temperature of the condenser shall be measured from the returning chilled water, after the mixers, but before the chiller, with 2.5 degrees Celsius added to adjust for the water to vapor temperatures.

For the purpose of calculating annual emissions, the control efficiency for each product or product type mixed during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the mixer, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. Emission Limitation:
There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

V. Testing Requirements (continued)

4. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-08401, issued on 12/1/01: Sections A.V.1 through A.V.3. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Myers 1 mixer		

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (Myers 1 mixer) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutants:

Pollutant: Acetone

TLV: 1,188 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 3,284 ug/m3

MAGLC: 28,286 ug/m3

Pollutant: Hexane

TLV: 176 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 3,284 ug/m3

MAGLC: 4,190 ug/m3

Pollutant: Toluene

TLV: 188 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 3,284 ug/m3

MAGLC: 4,476 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Myers 2 (P030)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Myers 2 mixer	OAC rule 3745-31-05(A)(3), (PTI 01-08401)	Organic compound (OC) emissions shall not exceed 7.3 tons/yr. There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emissions unit or from the room containing the unit, during the addition of solids. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-17-07(B)(1)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a If the permittee applies the condenser's control efficiency to calculate emissions from the product batches, the condenser shall be operated as required in Section A.II.1.

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2. Additional Terms and Conditions (continued)

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.5. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

2.d This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

II. Operational Restrictions

1. If the permittee applies the condenser's control efficiency for the purpose of calculating annual emissions, the following conditions must be met:

a. a continuous temperature monitor shall be operated and maintained at a point where the chilled water is returned from the mixers, and prior to the chiller, to document the outlet temperature of the condenser for the calculation of the condenser efficiency (Section A.V.2); and

b. if the temperature of the chilled water leaving the condenser serving the mix tank exceeds 18 degrees Celsius at any time, and if a control efficiency is applied to document emissions, the adjusted control efficiency shall be calculated as required in section A.V.2 for each such batch and the existing record of representative emissions maintained for the product batch shall not be used.

2. If the permittee applies the condenser's control efficiency for the purpose of calculating annual emissions, the pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information at the end of each month for the purpose of demonstrating compliance with the annual emission limitation in Section A.I.1 or for the purpose of calculating annual emissions:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, syrup, or other product processed during the month;

b. a record of the total number of batches of each said product, as grouped*, and the mass emission rate, in pounds per batch, of each product or product group that was applied to calculate (as below) each product or product group's emissions;

c. the total actual (controlled** and/or uncontrolled) OC emissions from all product batches produced, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency for each organic chemical component contained in each product batch/batch group and at each method of loss, using one of the following methods:

i. product batch(s) is/are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.2;

ii. product batch(s) is/are individually calculated because an existing record does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.2);

d. the total actual (controlled and/or uncontrolled) OC emissions from all product batches produced duing the month.

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

* Products may be grouped by similar product types (same chemical components and having similar concentrations) for monthly emissions estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the mixer condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of batch emissions, unless products are calculated individually.

** The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1 for each product or product batch group, may be added for each month to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

2. If emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining emission calculations for each individual batch:

a. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

b. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

c. records to document the value of each conservatively estimated and/or worst-case variable* for each product or product group;

d. the uncontrolled and controlled (where applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented above) are applied and calculated as required in Section A.V.1 and A.V.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch); and

e. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions determined above, for this emissions unit or an emissions unit with a greater volume.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record for each product or product group to which they could be applied.

3. If the condenser is used to demonstrate compliance with the annual emission limitation in Section A.I.1, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water leaving the condenser serving the mix tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

For those batches in which the condenser is used to demonstrate compliance, the permittee shall collect and maintain the following information for each such batch:

a. the computer record of the continuous temperature monitor which shall document the temperature of the chilled water leaving the condenser serving the mix tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the condenser, its temperature control device, monitoring equipment, and the mix tank, for each product batch; and

c. for any batch in which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section A.V.2.

III. Monitoring and/or Record Keeping Requirements (continued)

4. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report and for demonstrating compliance with the annual emission limitation in Section A.I.1:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the monthly OC emissions from Section A.III.1.d, for the calendar year.

5. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

6. If the condenser's control efficiency is used for the purpose of calculating annual emissions, the permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

7. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-08401, issued on 12/1/01: Sections A.III.1 through A.III.6. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. If the permittee applies the condenser's control efficiency to calculate emissions from this emissons unit, for those batches in which the condenser is used to demonstrate compliance the permittee shall submit quarterly temperature deviation (excursion) reports for each such batch, that identify all periods of time during which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

IV. Reporting Requirements (continued)

3. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-08401, issued on 12/1/01: Sections A.IV.1 through A.IV.2. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the annual emission limitation shall be documented with the submission of the annual fee emissions report and emissions shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 7.3 tons/yr.

Applicable Compliance Method:
a. Compliance with the annual OC emission limitation shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2, as the sum of each month's OC emissions for the calendar year.

b. Emissions from each batch or batch group shall be based on the following calculations:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$Pi = A - B/(C+T)$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$Yi = Pi / Pt = XiPi^*/ Pt$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)] x % saturation*

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)] x % saturation*

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from mixing (friction). The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to mixing heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

*The % saturation shall never be less than 60% and/or shall be adjusted with the most current and worst-case testing results, by product group and highest concentration of the volatile components. The % saturation shall not be used if a nitrogen purge is applied; and 80% saturation (worst-case) shall be used for all product groups not tested for the saturation level of the compound in the vapor space, unless it can be demonstrated that the saturation point is lower.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

V. Testing Requirements (continued)

2. If the condenser's control efficiency is used in the calculation of emissions, it shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser outlet water temperature (measured after the mix tanks, prior to the chiller) for each product, or worst-case product. It shall be assumed that the vapor outlet temperature is 2.5 degrees (Celsius) higher than the outlet water temperatures of the condenser, as measured by the continuous temperature monitor installed following the mixer(s), prior to the chiller. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch.

**Vapor outlet temperature of the condenser shall be measured from the returning chilled water, after the mixers, but before the chiller, with 2.5 degrees Celsius added to adjust for the water to vapor temperatures.

For the purpose of calculating annual emissions, the control efficiency for each product or product type mixed during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the mixer, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. Emission Limitation:
There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

V. Testing Requirements (continued)

4. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-08401, issued on 12/1/01: Sections A.V.1 through A.V.3. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Myers 2 mixer		

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (Myers 2 mixer) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutants:

Pollutant: Acetone

TLV: 1,188 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 2,908 ug/m3

MAGLC: 28,286 ug/m3

Pollutant: Hexane

TLV: 176 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 2,908 ug/m3

MAGLC: 4,190 ug/m3

Pollutant: Toluene

TLV: 188 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 2,908 ug/m3

MAGLC: 4,476 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Ross # 1 Mixer (P031)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Ross 1 mixer	OAC rule 3745-31-05(A)(3), (PTI 01-08401)	Organic compound (OC) emissions shall not exceed 7.3 tons/yr. There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emissions unit or from the room containing the unit, during the addition of solids. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-17-07(B)(1)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a If the permittee applies the condenser's control efficiency to calculate emissions from the product batches, the condenser shall be operated as required in Section A.II.1.

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2. Additional Terms and Conditions (continued)

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.5. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

2.d This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

II. Operational Restrictions

1. If the permittee applies the condenser's control efficiency for the purpose of calculating annual emissions, the following conditions must be met:

a. a continuous temperature monitor shall be operated and maintained at a point where the chilled water is returned from the mixers, and prior to the chiller, to document the outlet temperature of the condenser for the calculation of the condenser efficiency (Section A.V.2); and

b. if the temperature of the chilled water leaving the condenser serving the mix tank exceeds 18 degrees Celsius at any time, and if a control efficiency is applied to document emissions, the adjusted control efficiency shall be calculated as required in section A.V.2 for each such batch and the existing record of representative emissions maintained for the product batch shall not be used.

2. If the permittee applies the condenser's control efficiency for the purpose of calculating annual emissions, the pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information at the end of each month for the purpose of demonstrating compliance with the annual emission limitation in Section A.I.1 or for the purpose of calculating annual emissions:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, syrup, or other product processed during the month;

b. a record of the total number of batches of each said product, as grouped*, and the mass emission rate, in pounds per batch, of each product or product group that was applied to calculate (as below) each product or product group's emissions;

c. the total actual (controlled** and/or uncontrolled) OC emissions from all product batches produced, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency for each organic chemical component contained in each product batch/batch group and at each method of loss, using one of the following methods:

i. product batch(s) is/are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.2;

ii. product batch(s) is/are individually calculated because an existing record does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.2);

d. the total actual (controlled and/or uncontrolled) OC emissions from all product batches produced duing the month.

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

* Products may be grouped by similar product types (same chemical components and having similar concentrations) for monthly emissions estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the mixer condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of batch emissions, unless products are calculated individually.

** The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1 for each product or product batch group, may be added for each month to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

2. If emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining emission calculations for each individual batch:

a. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

b. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

c. records to document the value of each conservatively estimated and/or worst-case variable* for each product or product group;

d. the uncontrolled and controlled (where applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented above) are applied and calculated as required in Section A.V.1 and A.V.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch); and

e. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions determined above, for this emissions unit or an emissions unit with a greater volume.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record for each product or product group to which they could be applied.

3. If the condenser is used to demonstrate compliance with the annual emission limitation in Section A.I.1, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water leaving the condenser serving the mix tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

For those batches in which the condenser is used to demonstrate compliance, the permittee shall collect and maintain the following information for each such batch:

a. the computer record of the continuous temperature monitor which shall document the temperature of the chilled water leaving the condenser serving the mix tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the condenser, its temperature control device, monitoring equipment, and the mix tank, for each product batch; and

c. for any batch in which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section A.V.2.

III. Monitoring and/or Record Keeping Requirements (continued)

4. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report and for demonstrating compliance with the annual emission limitation in Section A.I.1:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the monthly OC emissions from Section A.III.1.d, for the calendar year.

5. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

6. If the condenser's control efficiency is used for the purpose of calculating annual emissions, the permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

7. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-08401, issued on 12/1/01: Sections A.III.1 through A.III.6. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. If the permittee applies the condenser's control efficiency to calculate emissions from this emissons unit, for those batches in which the condenser is used to demonstrate compliance the permittee shall submit quarterly temperature deviation (excursion) reports for each such batch, that identify all periods of time during which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

IV. Reporting Requirements (continued)

3. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-08401, issued on 12/1/01: Sections A.IV.1 through A.IV.2. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the annual emission limitation shall be documented with the submission of the annual fee emissions report and emissions shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 7.3 tons/yr.

Applicable Compliance Method:
a. Compliance with the annual OC emission limitation shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2, as the sum of each month's OC emissions for the calendar year.

b. Emissions from each batch or batch group shall be based on the following calculations:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$Pi = A - B/(C+T)$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$Yi = Pi / Pt = XiPi^*/ Pt$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)] x % saturation*

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)] x % saturation*

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from mixing (friction). The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to mixing heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

*The % saturation shall never be less than 60% and/or shall be adjusted with the most current and worst-case testing results, by product group and highest concentration of the volatile components. The % saturation shall not be used if a nitrogen purge is applied; and 80% saturation (worst-case) shall be used for all product groups not tested for the saturation level of the compound in the vapor space, unless it can be demonstrated that the saturation point is lower.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

V. Testing Requirements (continued)

2. If the condenser's control efficiency is used in the calculation of emissions, it shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser outlet water temperature (measured after the mix tanks, prior to the chiller) for each product, or worst-case product. It shall be assumed that the vapor outlet temperature is 2.5 degrees (Celsius) higher than the outlet water temperatures of the condenser, as measured by the continuous temperature monitor installed following the mixer(s), prior to the chiller. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch.

**Vapor outlet temperature of the condenser shall be measured from the returning chilled water, after the mixers, but before the chiller, with 2.5 degrees Celsius added to adjust for the water to vapor temperatures.

For the purpose of calculating annual emissions, the control efficiency for each product or product type mixed during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the mixer, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. Emission Limitation:
There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

V. Testing Requirements (continued)

4. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-08401, issued on 12/1/01: Sections A.V.1 through A.V.3. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Ross 1 mixer		

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (Ross 1 mixer) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutants:

Pollutant: Acetone

TLV: 1,188 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 2,908 ug/m3

MAGLC: 28,286 ug/m3

Pollutant: Hexane

TLV: 176 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 2,908 ug/m3

MAGLC: 4,190 ug/m3

Pollutant: Toluene

TLV: 188 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 2,908 ug/m3

MAGLC: 4,476 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Littleford # 2 Mixer (P039)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Littleford #2 mixer	OAC rule 3745-31-05(A)(3), (PTI 01-06087)	Organic compound (OC) emissions shall not exceed 8 lbs/hr, 40 lbs/day, and 7.3 tons/yr. There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emissions unit or from the room containing the unit, during the addition of solids. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-17-07(B)(1)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a If the permittee applies the condenser's control efficiency to calculate emissions from the product batches, the condenser shall be operated as required in Section A.II.1.

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2. Additional Terms and Conditions (continued)

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.5. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

2.d This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

II. Operational Restrictions

1. If the permittee applies the condenser's control efficiency to comply with the emission limitations in Section A.I.1 or for the purpose of calculating annual emissions, the following conditions must be met:

a. a continuous temperature monitor shall be operated and maintained at a point where the chilled water is returned from the mixers, and prior to the chiller, to document the outlet temperature of the condenser for the calculation of the condenser efficiency (Section A.V.2); and

b. if the temperature of the chilled water leaving the condenser serving the mix tank exceeds 18 degrees Celsius at any time, and if a control efficiency is applied to document emissions, the adjusted control efficiency shall be calculated as required in section A.V.2 for each such batch and the existing record of representative emissions maintained for the product batch shall not be used.

2. If the permittee applies the condenser's control efficiency for the purpose of calculating annual emissions, the permittee shall perform annual inspections to ensure that the conservation vents are clean and unobstructed.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, syrup, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the mixer (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the uncontrolled and controlled (if applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

III. Monitoring and/or Record Keeping Requirements (continued)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if a control efficiency is applied and if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the mixer, to be used as the vapor inlet temperature; and a record of the conservative average condenser water outlet temperature, measured after the mixer, prior to the chiller, to be used to calculate the vapor outlet temperature in the control efficiency calculation (Section A.V.2), where it shall be assumed that the vapor outlet temperature is 2.5 degrees Celsius higher that the chiller water temperature leaving the mixer;

i. the total controlled (if condenser fully operational and used for compliance) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser, or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

j. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the mixer condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, syrup, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Section A.III.1.i) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. If the condenser is used to demonstrate compliance with the allowable limits in Section A.I.1, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water leaving the condenser serving the mix tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

For those batches in which the condenser is used to demonstrate compliance, the permittee shall collect and maintain the following information for each such batch:

a. the computer record of the continuous temperature monitor which shall document the temperature of the chilled water leaving the condenser serving the mix tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the condenser, its temperature control device, monitoring equipment, and the mix tank, for each product batch; and

c. for any batch in which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report and for demonstrating compliance with the annual emission limitation in Section A.I.1:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

5. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

6. If the condenser's control efficiency is used for the purpose of calculating annual emissions, the permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

7. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-06087, issued on 11/20/01: Sections A.III.1 through A.III.6. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 8 pounds per hour, and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the daily organic compound emissions exceeded 40 pounds per day, and the actual organic compound emissions for each such day.

2. If the permittee applies the condenser's control efficiency to calculate emissions from this emissons unit, for those batches in which the condenser is used to demonstrate compliance the permittee shall submit quarterly temperature deviation (excursion) reports for each such batch, that identify all periods of time during which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

4. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

5. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-06087, issued on 11/20/01: Sections A.IV.1 through A.IV.4. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 8 lbs/hr and 40 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)] x % saturation*

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)] x % saturation*

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from mixing (friction). The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to mixing heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

*The % saturation shall never be less than 60% and/or shall be adjusted with the most current and worst-case testing results, by product group and highest concentration of the volatile components. The % saturation shall not be used if a nitrogen purge is applied; and 80% saturation (worst-case) shall be used for all product groups not tested for the saturation level of the compound in the vapor space, unless it can be demonstrated that the saturation point is lower.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

V. Testing Requirements (continued)

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser outlet water temperature (measured after the mix tanks, prior to the chiller) for each product, or worst-case product. It shall be assumed that the vapor outlet temperature is 2.5 degrees (Celsius) higher than the outlet water temperatures of the condenser, as measured by the continuous temperature monitor installed following the mixer(s), prior to the chiller. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch.

**Vapor outlet temperature of the condenser shall be measured from the returning chilled water, after the mixers, but before the chiller, with 2.5 degrees Celsius added to adjust for the water to vapor temperatures.

For the purpose of calculating annual emissions, the control efficiency for each product or product type mixed during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the mixer, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. Emission Limitation:
Organic compound emissions shall not exceed 7.3 tons/yr.

Applicable Compliance Method:
Compliance shall be demonstrated through the calculations and record keeping requirements found in this permit and with the submission of the annual Fee Emission Report, Section A.III.4. The permittee may demonstrate compliance through the use of the condenser control by applying the estimated efficiency, calculated as required in Section A.V.2.

V. Testing Requirements (continued)

4. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the mixer is routed to the condenser.

5. Emission Limitation:
There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-06087, issued on 11/20/01: Sections A.V.1 through A.V.5. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Littleford #2 mixer		

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (Littleford Mixer #2) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant:

Pollutant: 1,1,1-Trichloroethane

TLV: 1,910 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-LevelConcentration: 3,068 ug/m3

MAGLC: 45,476 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Littleford # 3 Mixer (P040)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Littleford #3 mixer	OAC rule 3745-31-05(A)(3), (PTI 01-06087)	Organic compound (OC) emissions shall not exceed 8 lbs/hr, 40 lbs/day, and 7.3 tons/yr. There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emissions unit or from the room containing the unit, during the addition of solids. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-17-07(B)(1)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a If the permittee applies the condenser's control efficiency to calculate emissions from the product batches, the condenser shall be operated as required in Section A.II.1.

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2. Additional Terms and Conditions (continued)

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.5. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

2.d This emissions unit shall be employed only for the mixing of raw materials, where no chemical reactions occur between any of the raw materials.

II. Operational Restrictions

1. If the permittee applies the condenser's control efficiency to comply with the emission limitations in Section A.I.1 or for the purpose of calculating annual emissions, the following conditions must be met:

a. a continuous temperature monitor shall be operated and maintained at a point where the chilled water is returned from the mixers, and prior to the chiller, to document the outlet temperature of the condenser for the calculation of the condenser efficiency (Section A.V.2); and

b. if the temperature of the chilled water leaving the condenser serving the mix tank exceeds 18 degrees Celsius at any time, and if a control efficiency is applied to document emissions, the adjusted control efficiency shall be calculated as required in section A.V.2 for each such batch and the existing record of representative emissions maintained for the product batch shall not be used.

2. If the permittee applies the condenser's control efficiency for the purpose of calculating annual emissions, the permittee shall perform annual inspections to ensure that the conservation vents are clean and unobstructed.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, syrup, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the mixer (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the uncontrolled and controlled (if applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

III. Monitoring and/or Record Keeping Requirements (continued)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if a control efficiency is applied and if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the mixer, to be used as the vapor inlet temperature; and a record of the conservative average condenser water outlet temperature, measured after the mixer, prior to the chiller, to be used to calculate the vapor outlet temperature in the control efficiency calculation (Section A.V.2), where it shall be assumed that the vapor outlet temperature is 2.5 degrees Celsius higher that the chiller water temperature leaving the mixer;

i. the total controlled (if condenser fully operational and used for compliance) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser, or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

j. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the mixer condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, syrup, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Section A.III.1.i) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. If the condenser is used to demonstrate compliance with the allowable limits in Section A.I.1, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water leaving the condenser serving the mix tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

For those batches in which the condenser is used to demonstrate compliance, the permittee shall collect and maintain the following information for each such batch:

a. the computer record of the continuous temperature monitor which shall document the temperature of the chilled water leaving the condenser serving the mix tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the condenser, its temperature control device, monitoring equipment, and the mix tank, for each product batch; and

c. for any batch in which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report and for demonstrating compliance with the annual emission limitation in Section A.I.1:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

5. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

6. If the condenser's control efficiency is used for the purpose of calculating annual emissions, the permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

7. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-06087, issued on 11/20/01: Sections A.III.1 through A.III.6. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 8 pounds per hour, and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the daily organic compound emissions exceeded 40 pounds per day, and the actual organic compound emissions for each such day.

2. If the permittee applies the condenser's control efficiency to calculate emissions from this emissons unit, for those batches in which the condenser is used to demonstrate compliance the permittee shall submit quarterly temperature deviation (excursion) reports for each such batch, that identify all periods of time during which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

4. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

5. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-06087, issued on 11/20/01: Sections A.IV.1 through A.IV.4. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 8 lbs/hr and 40 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)] x % saturation*

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)] x % saturation*

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from mixing (friction). The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to mixing heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

*The % saturation shall never be less than 60% and/or shall be adjusted with the most current and worst-case testing results, by product group and highest concentration of the volatile components. The % saturation shall not be used if a nitrogen purge is applied; and 80% saturation (worst-case) shall be used for all product groups not tested for the saturation level of the compound in the vapor space, unless it can be demonstrated that the saturation point is lower.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

V. Testing Requirements (continued)

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser outlet water temperature (measured after the mix tanks, prior to the chiller) for each product, or worst-case product. It shall be assumed that the vapor outlet temperature is 2.5 degrees (Celsius) higher than the outlet water temperatures of the condenser, as measured by the continuous temperature monitor installed following the mixer(s), prior to the chiller. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch.

**Vapor outlet temperature of the condenser shall be measured from the returning chilled water, after the mixers, but before the chiller, with 2.5 degrees Celsius added to adjust for the water to vapor temperatures.

For the purpose of calculating annual emissions, the control efficiency for each product or product type mixed during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the mixer, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. Emission Limitation:
Organic compound emissions shall not exceed 7.3 tons/yr.

Applicable Compliance Method:
Compliance shall be demonstrated through the calculations and record keeping requirements found in this permit and with the submission of the annual Fee Emission Report, Section A.III.4. The permittee may demonstrate compliance through the use of the condenser control by applying the estimated efficiency, calculated as required in Section A.V.2.

V. Testing Requirements (continued)

4. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the mixer is routed to the condenser.

5. Emission Limitation:
There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-06087, issued on 11/20/01: Sections A.V.1 through A.V.5. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Littleford #3 mixer		

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (Littleford #3 mixer) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutants:

Pollutant: Acetone

TLV: 1,188 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 3,068 ug/m3

MAGLC: 28,286 ug/m3

Pollutant: Hexane

TLV: 176 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 3,068 ug/m3

MAGLC: 4,190 ug/m3

Pollutant: Toluene

TLV: 188 mg/m3

Maximum Hourly Emission Rate: 8.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 3,068 ug/m3

MAGLC: 4,476 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Ross #4 Mixer (P041)

Activity Description: Adhesives Mixing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Ross #4 mixer	OAC rule 3745-31-05(A)(3), (PTI 01-6304)	Organic compound (OC) emissions shall not exceed 3.80 lbs/hr, 18.80 lbs/day, and 3.40 tons/yr. The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(B)(1) and 3745-17-08(B).
	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-21-07(G)(2)	The emission limitation specified in this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a If the permittee installs a condenser for this emissions unit and applies the condenser's control efficiency to calculate emissions from the product batches, the condenser shall be operated as required in Section A.II.1.

2.b The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the mixer and/or bag dump, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid(s) to the mixer and/or bag dump at the completion of adding all dry batch mix materials.

2. Additional Terms and Conditions (continued)

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to this mixer, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.5. These egress points shall include, but not be limited to: mixer room exhaust vents, doorways, and windows. One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

II. Operational Restrictions

1. If the permittee installs a condenser on this emissions unit and applies the condenser control efficiency to comply with the emission limitations in Section A.I.1 or for the purpose of calculating annual emissions, the following conditions must be met:

a. a continuous temperature monitor shall be operated and maintained at a point where the chilled water is returned from the mixers, and prior to the chiller, to document the outlet temperature of the condenser for the calculation of the condenser efficiency (Section A.V.2); and

b. if the temperature of the chilled water leaving the condenser serving the mix tank exceeds 18 degrees Celsius at any time, and if a control efficiency is applied to document emissions, the adjusted control efficiency shall be calculated as required in section A.V.2 for each such batch and the existing record of representative emissions maintained for the product batch shall not be used.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, syrup, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the mixer (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

III. Monitoring and/or Record Keeping Requirements (continued)

iv. the uncontrolled (and controlled, if a condenser is installed) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 (and A.V.2 if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total uncontrolled (and controlled, if a condenser is installed) OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if a condenser is installed, is used to demonstrate compliance, and was operating properly throughout a batch run, and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the mixer, to be used as the vapor inlet temperature; and a record of the conservative average condenser water outlet temperature, measured after the mixer, prior to the chiller, to be used to calculate the vapor outlet temperature in the control efficiency calculation (Section A.V.2), where it shall be assumed that the vapor outlet temperature is 2.5 degrees Celsius higher that the chiller water temperature leaving the mixer;

i. the total uncontrolled (and if a condenser is installed and fully operational- the controlled) OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of a condenser (if installed), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

j. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If a condenser is installed and is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, syrup, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are represented by normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated; and/or

iv. a condenser is installed and used for compliance and the control efficiency is calculated as required in Section A.V.2 (and/or as in "i", the controlled emissions are maintained as per Section A.III.1.e);

c. the total actual (uncontrolled and/or controlled*, if a condenser is installed and used to demonstrate compliance) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions (and as specified in Section A.V.2 for the control efficiency of a condenser), and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Section A.III.1.i) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* If a condenser is installed and its control efficiency is applied, the controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. If the permittee installs a condenser on this emissions unit and the condenser is used to demonstrate compliance with the allowable limits in Section A.I.1, the permittee shall concurrently install, operate, and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water leaving the condenser serving the mix tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

For those batches in which a condenser is used to demonstrate compliance, the permittee shall collect and maintain the following information for each such batch:

a. the computer record of the continuous temperature monitor which shall document the temperature of the chilled water leaving the condenser serving the mix tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the condenser, its temperature control device, monitoring equipment, and the mix tank, for each product batch; and

c. for any batch in which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report and for demonstrating compliance with the annual emission limitation in Section A.I.1:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

5. The permittee shall perform monthly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

This emissions unit seldomly operates, the fugitive dust emissions from the mixer are negligible, and they vent into the building; therefore, monthly visible emissions checks are sufficient to assure ongoing compliance with the opacity limitation.

III. Monitoring and/or Record Keeping Requirements (continued)

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-06304, issued on 4/17/96: Sections A.III.1 through A.III.5. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 3.80 pounds per hour, and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the daily organic compound emissions exceeded 18.80 pounds per day, and the actual organic compound emissions for each such day.

2. If the permittee installs a condenser and applies a control efficiency to calculate emissions from this emissons unit, for those batches in which the condenser is used to demonstrate compliance the permittee shall submit quarterly temperature deviation (excursion) reports for each such batch, that identify all periods of time during which the temperature of the chilled water leaving the condenser serving the mix tank exceeded 18 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

4. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

5. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-06304, issued on 4/17/96: Sections A.IV.1 through A.IV.4. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 3.80 lbs/hr and 18.80 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)] x % saturation*

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)] x % saturation*

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from mixing (friction). The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to mixing heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

*The % saturation shall never be less than 60% and/or shall be adjusted with the most current and worst-case testing results, by product group and highest concentration of the volatile components. The % saturation shall not be used if a nitrogen purge is applied; and 80% saturation (worst-case) shall be used for all product groups not tested for the saturation level of the compound in the vapor space, unless it can be demonstrated that the saturation point is lower.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

V. Testing Requirements (continued)

2. If a condenser is installed on this emissions unit and a condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser outlet water temperature (measured after the mix tanks, prior to the chiller) for each product, or worst-case product. It shall be assumed that the vapor outlet temperature is 2.5 degrees (Celsius) higher than the outlet water temperatures of the condenser, as measured by the continuous temperature monitor installed following the mixer(s), prior to the chiller. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch.

**Vapor outlet temperature of the condenser shall be measured from the returning chilled water, after the mixers, but before the chiller, with 2.5 degrees Celsius added to adjust for the water to vapor temperatures.

For the purpose of calculating annual emissions and if a condenser is installed, the control efficiency for each product or product type mixed during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the mixer, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. Emission Limitation:
Organic compound emissions shall not exceed 3.40 tons/yr.

Applicable Compliance Method:
Compliance shall be demonstrated through the calculations and record keeping requirements found in this permit and with the submission of the annual Fee Emission Report, Section A.III.4. The permittee may demonstrate compliance through the use of the condenser control by applying the estimated efficiency, calculated as required in Section A.V.2.

V. Testing Requirements (continued)

4. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate using Methods 1 through 4 and 18, 25 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.

5. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-06304, issued on 4/17/96: Sections A.V.1 through A.V.5. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Continuous Reactor System (P103)

Activity Description: Continuous Emulsion Polymerization Process Producing Adhesives (Known as 01-25-04-0069-P003 Before Renaming)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
continuous reactor system with condenser	OAC rule 3745-21-07(G)(2)	Organic compound (OC) emissions shall not exceed 8 lbs/hr and 40 lbs/day. (See Section A.I.2.a.)
	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.c and A.I.2.d.)

2. Additional Terms and Conditions

2.a If the permittee applies the reactor condenser's control efficiency to comply with the emission limitations in Section A.I.1 or for the purpose of calculating annual emissions, the permittee shall not operate this emissions unit without the use of the reactor condenser; and it shall be operated as required in Section A.II.1.

2.b If the permittee applies a pre-emulsion tank(s) condenser's(s') control efficiency for the purpose of calculating hourly, daily, and annual emissions, the permittee shall not operate this emissions unit without the use of the pre-emulsion tank(s) condenser(s); and it/they shall be operated as required in Section A.II.2.

2.c The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the pre-emulsion tank(s), including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid at the completion of adding all pre-emulsion tank batch materials.

2.d For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank(s), from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.

2. Additional Terms and Conditions (continued)

2.e This emissions unit shall use only nonphotochemically reactive cleanup materials, as defined in OAC rule 3745-21-01(C)(5).

II. Operational Restrictions

1. If the reactor's condenser is used to demonstrate compliance, the maximum temperature of the exhaust gases from the condenser, following the reactor, shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35 degrees Celsius or above. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. If a pre-emulsion tank's condenser is used to demonstrate compliance, the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) shall not exceed 17 degrees Celsius at any time. This temperature may be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, resin, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the reactor and pre-emulsion tank(s) (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

III. Monitoring and/or Record Keeping Requirements (continued)

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the uncontrolled and controlled (if applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section A.V.2);

i. the highest temperature of the chilled water entering the condenser serving the pre-emulsion tank(s), as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;

j. if the temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) does not exceeds 17 degrees Celsius, a control efficiency of 65% for the pre-emulsion tank(s) condenser (from manufacturer's data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank(s); this calculation and record may also be maintained in the facility records, as required in Section A.III.1.e, and may be adjusted if additional testing is conducted for the condenser serving the reactor pre-emulsion tank(s);

III. Monitoring and/or Record Keeping Requirements (continued)

k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section A.V.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section A.III.1.e;

l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, resin, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections A.III.1.k and A.III.1.l) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. If the reactor's condenser is used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. If the pre-emulsion tank's(s') condenser is/are used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank(s);

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank(s) and its/their associated condenser, temperature control device, and monitoring equipment for each product batch*; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the pre-emulsion tank(s) exceeded 17 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section V.2.

* If the pre-emulsion tank(s) has/have operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank(s).

5. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

III. Monitoring and/or Record Keeping Requirements (continued)

6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 8 pounds per hour and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the organic compound emissions exceeded 40 pounds per day and the actual organic compound emissions for each such day.

2. For any batch in which the reactor's condenser is used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. For any batch in which the pre-emulsion tank's(s') condenser(s) is/are used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

4. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound (OC) emissions shall not exceed 8 lbs/hr and 40 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)]

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)]

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from heating and friction. The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

V. Testing Requirements (continued)

vi. If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser's vapor outlet temperature (measured by the continuous temperature monitor following the reactor) for each product or worst-case product. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch, in the reactor and pre-emulsion tank.

**Vapor outlet temperature of the reactor condenser shall be measured from the exhaust gases from the condenser serving and following the reactor.

**Vapor outlet temperature of the pre-emulsion tank shall be estimated from the chiller water temperature entering the pre-emulsion tank; the vapor outlet temperature shall be assumed to be 3.0 degrees Celsius higher than the chiller water temperature entering the pre-emulsion tank (this a conservative estimate from previous measurements of this difference).

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the reactor is routed to the condenser.

V. Testing Requirements (continued)

4. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Reactor 10 System (P106)

Activity Description: Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P006 Before Renaming)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 10 system with condenser	OAC rule 3745-31-05(A)(3), (PTI 01-05683)	Organic compound (OC) emissions shall not exceed 6.5 lbs OC/hr and 32.3 lbs OC/day. (See Section A.I.2.a.) There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-21-07(G)(2)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-07(B)(1)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The reactor and its pre-emulsion tank shall not be operated without the condensers being maintained as required in this permit.

2. Additional Terms and Conditions (continued)

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the pre-emulsion tank, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid at the completion of adding all pre-emulsion tank batch materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.

2.d This emissions unit shall use only nonphotochemically reactive cleanup materials, as defined in OAC rule 3745-21-01(C)(5).

II. Operational Restrictions

1. The maximum temperature of the exhaust gases from the condenser, following the reactor, shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35 degrees Celsius or above. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. The peak temperature of the chilled water entering the condenser serving the pre-emulsion tank shall not exceed 17 degrees Celsius at any time. This temperature may be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

3. The pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

4. The permittee shall maintain an emergency containment system capable of preventing the release of any liquid or solid materials from this emissions unit.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, resin, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the reactor and pre-emulsion tank (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the controlled and uncontrolled emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total controlled and uncontrolled OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

III. Monitoring and/or Record Keeping Requirements (continued)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section A.V.2);

i. the highest temperature of the chilled water entering the condenser serving the pre-emulsion tank, as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;

j. if the temperature of the chilled water entering the condenser serving the pre-emulsion tank does not exceeds 17 degrees Celsius, a control efficiency of 65% for the pre-emulsion tank condenser (from manufacturer's data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank; this calculation and record may also be maintained in the facility records, as required in Section A.III.1.e, and may be adjusted if additional testing is conducted for the condenser serving the reactor pre-emulsion tank;

k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section A.V.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section A.III.1.e;

l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, resin, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections A.III.1.k and A.III.1.l) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank and its associated condenser, temperature control device, and monitoring equipment for each product batch*; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the pre-emulsion tank exceeded 17 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section V.2.

* If the pre-emulsion tank has operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank.

5. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

III. Monitoring and/or Record Keeping Requirements (continued)

6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

7. The permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

8. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-05683, issued on 8/28/01: Sections A.III.1 through A.III.7. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 6.5 pounds per hour and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the organic compound emissions exceeded 32.3 pounds per day and the actual organic compound emissions for each such day.

2. The permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

4. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

IV. Reporting Requirements (continued)

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-05683, issued on 8/28/01: Sections A.IV.1 through A.IV.5. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 6.5 lbs/hr and/or 32.3 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)]

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)]

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from heating and friction. The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

V. Testing Requirements (continued)

vi. If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser's vapor outlet temperature (measured by the continuous temperature monitor following the reactor) for each product or worst-case product. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch, in the reactor and pre-emulsion tank.

**Vapor outlet temperature of the reactor condenser shall be measured from the exhaust gases from the condenser serving and following the reactor.

**Vapor outlet temperature of the pre-emulsion tank shall be estimated from the chiller water temperature entering the pre-emulsion tank; the vapor outlet temperature shall be assumed to be 3.0 degrees Celsius higher than the chiller water temperature entering the pre-emulsion tank (this a conservative estimate from previous measurements of this difference).

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the reactor is routed to the condenser.

V. Testing Requirements (continued)

4. Emission Limitation:
There shall be no visible emissions from any stack or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

5. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-05683, issued on 8/28/01: Sections A.V.1 through A.V.4. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 10 system with condenser		

2. Additional Terms and Conditions

None

II. Operational Restrictions

1. The permittee shall maintain the emergency containment system, installed to prevent the release of liquids and solid materials from the emission unit, and shall perform an annual inspection to assure the design is adequate to prevent any release of liquids or solids in accordance with good engineering practices.

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (reactor 10 system) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant:

Pollutant: vinyl acetate

TLV: 35 mg/m3

Maximum Hourly Emission Rate: 19.5 lbs/hr from P106, P107, and P116 all venting to one stack

Predicted 1-Hour Maximum Ground-Level Concentration: 2,358 ug/m3

MAGLC (adjusted for hours of operation, TLV/14): 2,500 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Reactor 9 System (P107)

Activity Description: Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P007 Before Renaming)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 9 system with condenser	OAC rule 3745-31-05(A)(3), (PTI 01-05683)	Organic compound (OC) emissions shall not exceed 6.5 lbs OC/hr and 32.3 lbs OC/day. (See Section A.I.2.a.) There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-21-07(G)(2)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-07(B)(1)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The reactor and its pre-emulsion tank shall not be operated without the condensers being maintained as required in this permit.

2. Additional Terms and Conditions (continued)

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the pre-emulsion tank, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid at the completion of adding all pre-emulsion tank batch materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.

2.d This emissions unit shall use only nonphotochemically reactive cleanup materials, as defined in OAC rule 3745-21-01(C)(5).

II. Operational Restrictions

1. The maximum temperature of the exhaust gases from the condenser, following the reactor, shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35 degrees Celsius or above. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. The peak temperature of the chilled water entering the condenser serving the pre-emulsion tank shall not exceed 17 degrees Celsius at any time. This temperature may be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

3. The pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

4. The permittee shall maintain an emergency containment system capable of preventing the release of any liquid or solid materials from this emissions unit.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, resin, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the reactor and pre-emulsion tank (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the controlled and uncontrolled emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total controlled and uncontrolled OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

III. Monitoring and/or Record Keeping Requirements (continued)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section A.V.2);

i. the highest temperature of the chilled water entering the condenser serving the pre-emulsion tank, as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;

j. if the temperature of the chilled water entering the condenser serving the pre-emulsion tank does not exceeds 17 degrees Celsius, a control efficiency of 65% for the pre-emulsion tank condenser (from manufacturer's data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank; this calculation and record may also be maintained in the facility records, as required in Section A.III.1.e, and may be adjusted if additional testing is conducted for the condenser serving the reactor pre-emulsion tank;

k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section A.V.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section A.III.1.e;

l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, resin, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections A.III.1.k and A.III.1.l) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank and its associated condenser, temperature control device, and monitoring equipment for each product batch*; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the pre-emulsion tank exceeded 17 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section V.2.

* If the pre-emulsion tank has operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank.

5. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

III. Monitoring and/or Record Keeping Requirements (continued)

6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

7. The permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

8. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-05683, issued on 8/28/01: Sections A.III.1 through A.III.7. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 6.5 pounds per hour and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the organic compound emissions exceeded 32.3 pounds per day and the actual organic compound emissions for each such day.

2. The permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

4. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

IV. Reporting Requirements (continued)

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-05683, issued on 8/28/01: Sections A.IV.1 through A.IV.5. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 6.5 lbs/hr and/or 32.3 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)]

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)]

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from heating and friction. The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

V. Testing Requirements (continued)

vi. If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser's vapor outlet temperature (measured by the continuous temperature monitor following the reactor) for each product or worst-case product. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch, in the reactor and pre-emulsion tank.

**Vapor outlet temperature of the reactor condenser shall be measured from the exhaust gases from the condenser serving and following the reactor.

**Vapor outlet temperature of the pre-emulsion tank shall be estimated from the chiller water temperature entering the pre-emulsion tank; the vapor outlet temperature shall be assumed to be 3.0 degrees Celsius higher than the chiller water temperature entering the pre-emulsion tank (this a conservative estimate from previous measurements of this difference).

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

V. Testing Requirements (continued)

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

a. The emission testing shall be conducted within 6 months of permit issuance and within 6 months prior to permit expiration.

b. The emission testing shall be conducted to demonstrate compliance with the hourly OC emission limitation.

c. The following test methods shall be employed to demonstrate compliance: Methods 1 through 4 and 18, 25 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. The test method 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.

d. In order to demonstrate compliance with the overall control efficiency of the condensers, as calculated and documented in Section V.2, emission testing shall be conducted simultaneously at both the inlet and outlet of the condensers.

e. If the pre-emulsion tank's condenser control efficiency is used to demonstrate compliance, the vapor outlet temperature of the condenser shall be directly measured at the same time as chiller water temperature entering the pre-emulsion tank, to document the 3.0 degrees Celsius added to adjust for the inlet water to the outlet vapor temperatures in the efficiency calculation.

f. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the reactor is routed to the condenser.

g. The emission testing shall be conducted while the emissions unit is operating at or near its maximum capacity for a typical batch and producing batches that are representative of worst-case emissions. During testing, other emission sources that vent to the condenser shall be operated, or not operated, according to standard Franklin International operating practices.

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 Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit 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 Central District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA Central District Office 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 emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Central District Office 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 Ohio EPA Central District Office.

4. Emission Limitation:
There shall be no visible emissions from any stack or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

V. Testing Requirements (continued)

5. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-05683, issued on 8/28/01: Sections A.V.1 through A.V.4. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 9 system with condenser		

2. Additional Terms and Conditions

None

II. Operational Restrictions

1. The permittee shall maintain the emergency containment system, installed to prevent the release of liquids and solid materials from the emission unit, and shall perform an annual inspection to assure the design is adequate to prevent any release of liquids or solids in accordance with good engineering practices.

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (reactor 9 system) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant:

Pollutant: vinyl acetate

TLV: 35 mg/m3

Maximum Hourly Emission Rate: 19.5 lbs/hr from P106, P107, and P116 all venting to one stack

Predicted 1-Hour Maximum Ground-Level Concentration: 2,358 ug/m3

MAGLC (adjusted for hours of operation, TLV/14): 2,500 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Reactor 4 System (P113)

Activity Description: Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P013 Before Renaming)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 4 system with condenser	OAC rule 3745-21-07(G)(2)	Organic compound (OC) emissions shall not exceed 8 lbs/hr and 40 lbs/day. (See Section A.I.2.a.)
	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.c and A.I.2.d.)

2. Additional Terms and Conditions

2.a If the permittee applies the reactor condenser's control efficiency to comply with the emission limitations in Section A.I.1 or for the purpose of calculating annual emissions, the permittee shall not operate this emissions unit without the use of the reactor condenser; and it shall be operated as required in Section A.II.1.

2.b If the permittee applies the pre-emulsion tank condenser's control efficiency for the purpose of calculating hourly, daily, and annual emissions, the permittee shall not operate this emissions unit without the use of the pre-emulsion tank condenser; and it shall be operated as required in Section A.II.2.

2.c The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the pre-emulsion tank, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid at the completion of adding all pre-emulsion tank batch materials.

2.d For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.

2. Additional Terms and Conditions (continued)

2.e This emissions unit shall use only nonphotochemically reactive cleanup materials, as defined in OAC rule 3745-21-01(C)(5).

II. Operational Restrictions

1. If the reactor's condenser is used to demonstrate compliance, the maximum temperature of the exhaust gases from the condenser, following the reactor, shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35 degrees Celsius or above. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. If a pre-emulsion tank's condenser is used to demonstrate compliance, the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) shall not exceed 17 degrees Celsius at any time. This temperature may be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, resin, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the reactor and pre-emulsion tank (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

III. Monitoring and/or Record Keeping Requirements (continued)

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the uncontrolled and controlled (if applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section A.V.2);

i. the highest temperature of the chilled water entering the condenser serving the pre-emulsion tank, as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;

j. if the temperature of the chilled water entering the condenser serving the pre-emulsion tank does not exceeds 17 degrees Celsius, a control efficiency of 65% for the pre-emulsion tank condenser (from manufacturer's data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank; this calculation and record may also be maintained in the facility records, as required in Section A.III.1.e, and may be adjusted if additional testing is conducted for the condenser serving the reactor pre-emulsion tank;

III. Monitoring and/or Record Keeping Requirements (continued)

k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section A.V.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section A.III.1.e;

l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, resin, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections A.III.1.k and A.III.1.l) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. If the reactor's condenser is used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. If the pre-emulsion tank's condenser is used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank and its associated condenser, temperature control device, and monitoring equipment for each product batch*; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the pre-emulsion tank exceeded 17 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section V.2.

* If the pre-emulsion tank has operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank.

5. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

III. Monitoring and/or Record Keeping Requirements (continued)

6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 8 pounds per hour and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the organic compound emissions exceeded 40 pounds per day and the actual organic compound emissions for each such day.

2. For any batch in which the reactor's condenser is used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. For any batch in which the pre-emulsion tank's condenser is used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

4. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound (OC) emissions shall not exceed 8 lbs/hr and 40 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)]

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)]

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from heating and friction. The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

V. Testing Requirements (continued)

vi. If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser's vapor outlet temperature (measured by the continuous temperature monitor following the reactor) for each product or worst-case product. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch, in the reactor and pre-emulsion tank.

**Vapor outlet temperature of the reactor condenser shall be measured from the exhaust gases from the condenser serving and following the reactor.

**Vapor outlet temperature of the pre-emulsion tank shall be estimated from the chiller water temperature entering the pre-emulsion tank; the vapor outlet temperature shall be assumed to be 3.0 degrees Celsius higher than the chiller water temperature entering the pre-emulsion tank (this a conservative estimate from previous measurements of this difference).

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the reactor is routed to the condenser.

V. Testing Requirements (continued)

4. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Reactor 5 System (P114)

Activity Description: Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P014 Before Renaming)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 5 system with condenser	OAC rule 3745-21-07(G)(2)	Organic compound (OC) emissions shall not exceed 8 lbs/hr and 40 lbs/day. (See Section A.I.2.a.)
	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.c and A.I.2.d.)

2. Additional Terms and Conditions

2.a If the permittee applies the reactor condenser's control efficiency to comply with the emission limitations in Section A.I.1 or for the purpose of calculating annual emissions, the permittee shall not operate this emissions unit without the use of the reactor condenser; and it shall be operated as required in Section A.II.1.

2.b If the permittee applies the pre-emulsion tank condenser's control efficiency for the purpose of calculating hourly, daily, and annual emissions, the permittee shall not operate this emissions unit without the use of the pre-emulsion tank condenser; and it shall be operated as required in Section A.II.2.

2.c The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the pre-emulsion tank, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid at the completion of adding all pre-emulsion tank batch materials.

2.d For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.

2. Additional Terms and Conditions (continued)

2.e This emissions unit shall use only nonphotochemically reactive cleanup materials, as defined in OAC rule 3745-21-01(C)(5).

II. Operational Restrictions

1. If the reactor's condenser is used to demonstrate compliance, the maximum temperature of the exhaust gases from the condenser, following the reactor, shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35 degrees Celsius or above. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. If a pre-emulsion tank's condenser is used to demonstrate compliance, the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) shall not exceed 17 degrees Celsius at any time. This temperature may be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, resin, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the reactor and pre-emulsion tank (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

III. Monitoring and/or Record Keeping Requirements (continued)

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the uncontrolled and controlled (if applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section A.V.2);

i. the highest temperature of the chilled water entering the condenser serving the pre-emulsion tank, as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;

j. if the temperature of the chilled water entering the condenser serving the pre-emulsion tank does not exceeds 17 degrees Celsius, a control efficiency of 65% for the pre-emulsion tank condenser (from manufacturer's data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank; this calculation and record may also be maintained in the facility records, as required in Section A.III.1.e, and may be adjusted if additional testing is conducted for the condenser serving the reactor pre-emulsion tank;

III. Monitoring and/or Record Keeping Requirements (continued)

k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section A.V.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section A.III.1.e;

l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, resin, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections A.III.1.k and A.III.1.l) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. If the reactor's condenser is used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. If the pre-emulsion tank's condenser is used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank and its associated condenser, temperature control device, and monitoring equipment for each product batch*; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the pre-emulsion tank exceeded 17 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section V.2.

* If the pre-emulsion tank has operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank.

5. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

III. Monitoring and/or Record Keeping Requirements (continued)

6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 8 pounds per hour and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the organic compound emissions exceeded 40 pounds per day and the actual organic compound emissions for each such day.

2. For any batch in which the reactor's condenser is used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. For any batch in which the pre-emulsion tank's condenser is used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

4. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound (OC) emissions shall not exceed 8 lbs/hr and 40 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)]

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)]

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from heating and friction. The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

V. Testing Requirements (continued)

vi. If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser's vapor outlet temperature (measured by the continuous temperature monitor following the reactor) for each product or worst-case product. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch, in the reactor and pre-emulsion tank.

**Vapor outlet temperature of the reactor condenser shall be measured from the exhaust gases from the condenser serving and following the reactor.

**Vapor outlet temperature of the pre-emulsion tank shall be estimated from the chiller water temperature entering the pre-emulsion tank; the vapor outlet temperature shall be assumed to be 3.0 degrees Celsius higher than the chiller water temperature entering the pre-emulsion tank (this a conservative estimate from previous measurements of this difference).

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the reactor is routed to the condenser.

V. Testing Requirements (continued)

4. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Reactor 7 System (P115)

Activity Description: Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P015 Before Renaming)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 7 system with condenser	OAC rule 3745-31-05(A)(3), (PTI 01-08402)	Organic compound (OC) emissions shall not exceed 7.3 lbs OC/hr and 32.3 lbs OC/day. (See Section A.I.2.a.) OC emissions shall not exceed 5.9 tons OC/yr. There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-21-07(G)(2)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-07(B)(1)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The reactor and its pre-emulsion tank shall not be operated without the condensers being maintained as required in this permit.

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the pre-emulsion tank, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid at the completion of adding all pre-emulsion tank batch materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.

2.d This emissions unit shall use only nonphotochemically reactive cleanup materials, as defined in OAC rule 3745-21-01(C)(5).

II. Operational Restrictions

1. The maximum temperature of the exhaust gases from the condenser, following the reactor, shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35 degrees Celsius or above. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. The peak temperature of the chilled water entering the condenser serving the pre-emulsion tank shall not exceed 17 degrees Celsius at any time. This temperature may be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

3. The pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, resin, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the reactor and pre-emulsion tank (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the controlled and uncontrolled emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total controlled and uncontrolled OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

III. Monitoring and/or Record Keeping Requirements (continued)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section A.V.2);

i. the highest temperature of the chilled water entering the condenser serving the pre-emulsion tank, as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;

j. if the temperature of the chilled water entering the condenser serving the pre-emulsion tank does not exceeds 17 degrees Celsius, a control efficiency of 65% for the pre-emulsion tank condenser (from manufacturer's data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank; this calculation and record may also be maintained in the facility records, as required in Section A.III.1.e, and may be adjusted if additional testing is conducted for the condenser serving the reactor pre-emulsion tank;

k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section A.V.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section A.III.1.e;

l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, resin, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections A.III.1.k and A.III.1.l) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank and its associated condenser, temperature control device, and monitoring equipment for each product batch*; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the pre-emulsion tank exceeded 17 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section V.2.

* If the pre-emulsion tank has operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank.

5. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report and for demonstrating compliance with the annual emission limitation in Section A.I.1:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

III. Monitoring and/or Record Keeping Requirements (continued)

6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

7. The permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

8. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-08402, issued on 6/26/01: Sections A.III.1 through A.III.7. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the calculated average hourly organic compound emissions exceeded 7.3 pounds per hour and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the organic compound emissions exceeded 32.3 pounds per day and the actual organic compound emissions for each such day.

The control efficiency shall be demonstrated as required in Section A.V.2; and the quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

2. The permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

4. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

IV. Reporting Requirements (continued)

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-08402, issued on 6/26/01: Sections A.IV.1 through A.IV.5. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 7.3 lbs/hr and/or 32.3 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)]

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)]

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from heating and friction. The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

V. Testing Requirements (continued)

vi. If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser's vapor outlet temperature (measured by the continuous temperature monitor following the reactor) for each product or worst-case product. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch, in the reactor and pre-emulsion tank.

**Vapor outlet temperature of the reactor condenser shall be measured from the exhaust gases from the condenser serving and following the reactor.

**Vapor outlet temperature of the pre-emulsion tank shall be estimated from the chiller water temperature entering the pre-emulsion tank; the vapor outlet temperature shall be assumed to be 3.0 degrees Celsius higher than the chiller water temperature entering the pre-emulsion tank (this a conservative estimate from previous measurements of this difference).

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

V. Testing Requirements (continued)

3. Emission Limitation:
Organic compound emissions shall not exceed 5.9 tons/yr

Applicable Compliance Method:
Compliance shall be demonstrated through the calculations and record keeping requirements found in this permit and with the submission of the annual Fee Emission Report, Section A.III.5. The permittee may demonstrate compliance through the use of the condenser control by applying the estimated efficiency, calculated as required in Section A.V.2.

4. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the reactor is routed to the condenser.

5. Emission Limitation:
There shall be no visible emissions from any stack or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-08402, issued on 6/26/01: Sections A.V.1 through A.V.5. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 7 system with condenser		

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (reactor 7 system) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutants:

Pollutant: vinyl acetate

TLV: 35 mg/m3

Maximum Hourly Emission Rate: 7.3 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 1,153 ug/m3

MAGLC: 1,167 ug/m3, adjusted for maximum hours of operation

Pollutant: N-Butyl Acrylate

TLV: 10.5 mg/m3

Maximum Hourly Emission Rate: 1.05 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 165.8 ug/m3

MAGLC: 250 ug/m3

Pollutant: Acrylic Acid

TLV: 5.9 mg/m3

Maximum Hourly Emission Rate: 0.24 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 37.92 ug/m3

MAGLC: 140.5 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Reactor 8 System (P116)

Activity Description: Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P016 Before Renaming)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 8 system with condenser	OAC rule 3745-31-05(A)(3), (PTI 01-05683)	Organic compound (OC) emissions shall not exceed 6.5 lbs OC/hr and 32.3 lbs OC/day. (See Section A.I.2.a.) There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-21-07(G)(2)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-07(B)(1)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The reactor and its pre-emulsion tank shall not be operated without the condensers being maintained as required in this permit.

2. Additional Terms and Conditions (continued)

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the pre-emulsion tank, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid at the completion of adding all pre-emulsion tank batch materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.

2.d This emissions unit shall use only nonphotochemically reactive cleanup materials, as defined in OAC rule 3745-21-01(C)(5).

II. Operational Restrictions

1. The maximum temperature of the exhaust gases from the condenser, following the reactor, shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35 degrees Celsius or above. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. The peak temperature of the chilled water entering the condenser serving the pre-emulsion tank shall not exceed 17 degrees Celsius at any time. This temperature may be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

3. The pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

4. The permittee shall maintain an emergency containment system capable of preventing the release of any liquid or solid materials from this emissions unit.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, resin, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the reactor and pre-emulsion tank (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the controlled and uncontrolled emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total controlled and uncontrolled OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

III. Monitoring and/or Record Keeping Requirements (continued)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section A.V.2);

i. the highest temperature of the chilled water entering the condenser serving the pre-emulsion tank, as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;

j. if the temperature of the chilled water entering the condenser serving the pre-emulsion tank does not exceeds 17 degrees Celsius, a control efficiency of 65% for the pre-emulsion tank condenser (from manufacturer's data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank; this calculation and record may also be maintained in the facility records, as required in Section A.III.1.e, and may be adjusted if additional testing is conducted for the condenser serving the reactor pre-emulsion tank;

k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section A.V.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section A.III.1.e;

l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, resin, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections A.III.1.k and A.III.1.l) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank and its associated condenser, temperature control device, and monitoring equipment for each product batch*; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the pre-emulsion tank exceeded 17 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section V.2.

* If the pre-emulsion tank has operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank.

5. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

III. Monitoring and/or Record Keeping Requirements (continued)

6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

7. The permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

8. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-05683, issued on 8/28/01: Sections A.III.1 through A.III.7. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 6.5 pounds per hour and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the organic compound emissions exceeded 32.3 pounds per day and the actual organic compound emissions for each such day.

2. The permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

4. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

IV. Reporting Requirements (continued)

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-05683, issued on 8/28/01: Sections A.IV.1 through A.IV.5. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 6.5 lbs/hr and/or 32.3 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)]

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)]

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from heating and friction. The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

V. Testing Requirements (continued)

vi. If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser's vapor outlet temperature (measured by the continuous temperature monitor following the reactor) for each product or worst-case product. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch, in the reactor and pre-emulsion tank.

**Vapor outlet temperature of the reactor condenser shall be measured from the exhaust gases from the condenser serving and following the reactor.

**Vapor outlet temperature of the pre-emulsion tank shall be estimated from the chiller water temperature entering the pre-emulsion tank; the vapor outlet temperature shall be assumed to be 3.0 degrees Celsius higher than the chiller water temperature entering the pre-emulsion tank (this a conservative estimate from previous measurements of this difference).

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the reactor is routed to the condenser.

V. Testing Requirements (continued)

4. Emission Limitation:
There shall be no visible emissions from any stack or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

5. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-05683, issued on 8/28/01: Sections A.V.1 through A.V.4. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 8 system with condenser		

2. Additional Terms and Conditions

None

II. Operational Restrictions

1. The permittee shall maintain the emergency containment system, installed to prevent the release of liquids and solid materials from the emission unit, and shall perform an annual inspection to assure the design is adequate to prevent any release of liquids or solids in accordance with good engineering practices.

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (reactor 8 system) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant:

Pollutant: vinyl acetate

TLV: 35 mg/m3

Maximum Hourly Emission Rate: 19.5 lbs/hr from P106, P107, and P116 all venting to one stack

Predicted 1-Hour Maximum Ground-Level Concentration: 2,358 ug/m3

MAGLC (adjusted for hours of operation, TLV/14): 2,500 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Reactor 6 System (P124)

Activity Description: Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P024 Before Renaming)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 6 system with condenser	OAC rule 3745-31-05(A)(3), (PTI 01-05232)	Organic compound (OC) emissions shall not exceed 4.38 lbs OC/hr and 21.92 lbs OC/day. (See Section A.I.2.a.) There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-21-07(G)(2)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-07(B)(1)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The reactor and its pre-emulsion tank shall not be operated without the condensers being maintained as required in this permit.

2. Additional Terms and Conditions (continued)

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the pre-emulsion tank, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid at the completion of adding all pre-emulsion tank batch materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.

2.d This emissions unit shall use only nonphotochemically reactive cleanup materials, as defined in OAC rule 3745-21-01(C)(5).

II. Operational Restrictions

1. The maximum temperature of the exhaust gases from the condenser, following the reactor, shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35 degrees Celsius or above. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. The peak temperature of the chilled water entering the condenser serving the pre-emulsion tank shall not exceed 17 degrees Celsius at any time. This temperature may be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

3. The pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

4. The permittee shall maintain an emergency containment system capable of preventing the release of any liquid or solid materials from this emissions unit.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, resin, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the reactor and pre-emulsion tank (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the controlled and uncontrolled emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total controlled and uncontrolled OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

III. Monitoring and/or Record Keeping Requirements (continued)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section A.V.2);

i. the highest temperature of the chilled water entering the condenser serving the pre-emulsion tank, as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;

j. if the temperature of the chilled water entering the condenser serving the pre-emulsion tank does not exceeds 17 degrees Celsius, a control efficiency of 65% for the pre-emulsion tank condenser (from manufacturer's data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank; this calculation and record may also be maintained in the facility records, as required in Section A.III.1.e, and may be adjusted if additional testing is conducted for the condenser serving the reactor pre-emulsion tank;

k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section A.V.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section A.III.1.e;

l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, resin, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections A.III.1.k and A.III.1.l) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank and its associated condenser, temperature control device, and monitoring equipment for each product batch*; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the pre-emulsion tank exceeded 17 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section V.2.

* If the pre-emulsion tank has operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank.

5. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

III. Monitoring and/or Record Keeping Requirements (continued)

6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

7. The permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

8. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-05232, issued on 7/10/01: Sections A.III.1 through A.III.7. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the calculated average hourly organic compound emissions exceeded 4.38 pounds per hour and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the organic compound emissions exceeded 21.92 pounds per day and the actual hourly organic compound emissions for each such day.

The control efficiency shall be demonstrated as required in Section A.V.2; and the quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

2. The permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

4. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

IV. Reporting Requirements (continued)

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-05232, issued on 7/10/01: Sections A.IV.1 through A.IV.5. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 4.38 lbs/hr and/or 21.92 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)]

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)]

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from heating and friction. The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

V. Testing Requirements (continued)

vi. If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser's vapor outlet temperature (measured by the continuous temperature monitor following the reactor) for each product or worst-case product. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch, in the reactor and pre-emulsion tank.

**Vapor outlet temperature of the reactor condenser shall be measured from the exhaust gases from the condenser serving and following the reactor.

**Vapor outlet temperature of the pre-emulsion tank shall be estimated from the chiller water temperature entering the pre-emulsion tank; the vapor outlet temperature shall be assumed to be 3.0 degrees Celsius higher than the chiller water temperature entering the pre-emulsion tank (this a conservative estimate from previous measurements of this difference).

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the reactor is routed to the condenser.

V. Testing Requirements (continued)

4. Emission Limitation:
There shall be no visible emissions from any stack or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

5. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-05232, issued on 7/10/01: Sections A.V.1 through A.V.4. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 6 system with condenser		

2. Additional Terms and Conditions

None

II. Operational Restrictions

1. The permittee shall maintain the emergency containment system, installed to prevent the release of liquids and solid materials from the emission unit, and shall perform an annual inspection to assure the design is adequate to prevent any release of liquids or solids in accordance with good engineering practices.

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (reactor 6 system) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant:

Pollutant: vinyl acetate

TLV: 35 mg/m3

Maximum Hourly Emission Rate: 4.38 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: Not run ug/m3

MAGLC (adjusted for hours of operation, TLV/14): 2,500 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Reactor 11 System (P125)

Activity Description: Emulsion Polymerization Process Producing Adhesives
(Known as 01-25-04-0069-P125 Before Renaming)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 11 system with condenser	OAC rule 3745-31-05(A)(3), (PTI 01-06303)	Organic compound (OC) emissions shall not exceed 7.8 lbs OC/hr and 39.0 lbs OC/day. (See Section A.I.2.a.)
		There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-21-07(G)(2)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-07(B)(1)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The reactor and its pre-emulsion tank shall not be operated without the condensers being maintained as required in this permit.

2. Additional Terms and Conditions (continued)

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the pre-emulsion tank, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid at the completion of adding all pre-emulsion tank batch materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.

2.d This emissions unit shall use only nonphotochemically reactive cleanup materials, as defined in OAC rule 3745-21-01(C)(5).

II. Operational Restrictions

1. The maximum temperature of the exhaust gases from the condenser, following the reactor, shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35 degrees Celsius or above. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. The peak temperature of the chilled water entering the condenser serving the pre-emulsion tank shall not exceed 17 degrees Celsius at any time. This temperature may be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

3. The pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

4. The permittee shall maintain an emergency containment system capable of preventing the release of any liquid or solid materials from this emissions unit.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, resin, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the reactor and pre-emulsion tank (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the controlled and uncontrolled emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total controlled and uncontrolled OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

III. Monitoring and/or Record Keeping Requirements (continued)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section A.V.2);

i. the highest temperature of the chilled water entering the condenser serving the pre-emulsion tank, as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;

j. if the temperature of the chilled water entering the condenser serving the pre-emulsion tank does not exceeds 17 degrees Celsius, a control efficiency of 65% for the pre-emulsion tank condenser (from manufacturer's data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank; this calculation and record may also be maintained in the facility records, as required in Section A.III.1.e, and may be adjusted if additional testing is conducted for the condenser serving the reactor pre-emulsion tank;

k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section A.V.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section A.III.1.e;

l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, resin, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections A.III.1.k and A.III.1.l) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank and its associated condenser, temperature control device, and monitoring equipment for each product batch*; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the pre-emulsion tank exceeded 17 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section V.2.

* If the pre-emulsion tank has operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank.

5. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

III. Monitoring and/or Record Keeping Requirements (continued)

6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

7. The permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

8. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-06303, issued on 8/28/01: Sections A.III.1 through A.III.7. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the calculated average hourly organic compound emissions exceeded 7.8 pounds per hour and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the organic compound emissions exceeded 39.0 pounds per day and the actual organic compound emissions for each such day.

The control efficiency shall be demonstrated as required in Section A.V.2; and the quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

2. The permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

4. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

IV. Reporting Requirements (continued)

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-06303, issued on 8/28/01: Sections A.IV.1 through A.IV.5. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 7.8 lbs/hr and or 39.0 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)]

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)]

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from heating and friction. The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

V. Testing Requirements (continued)

vi. If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser's vapor outlet temperature (measured by the continuous temperature monitor following the reactor) for each product or worst-case product. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch, in the reactor and pre-emulsion tank.

**Vapor outlet temperature of the reactor condenser shall be measured from the exhaust gases from the condenser serving and following the reactor.

**Vapor outlet temperature of the pre-emulsion tank shall be estimated from the chiller water temperature entering the pre-emulsion tank; the vapor outlet temperature shall be assumed to be 3.0 degrees Celsius higher than the chiller water temperature entering the pre-emulsion tank (this a conservative estimate from previous measurements of this difference).

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the reactor is routed to the condenser.

V. Testing Requirements (continued)

4. Emission Limitation:
There shall be no visible emissions from any stack or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 11 system with condenser		

2. Additional Terms and Conditions

None

II. Operational Restrictions

1. The permittee shall maintain the emergency containment system, installed to prevent the release of liquids and solid materials from the emission unit, and shall perform an annual inspection to assure the design is adequate to prevent any release of liquids or solids in accordance with good engineering practices.

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (reactor 11 system) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant:

Pollutant: vinyl acetate

TLV: 35 mg/m3

Maximum Hourly Emission Rate: 7.8 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 896.9 ug/m3

MAGLC (adjusted for hours of operation, TLV/14): 2,500 ug/m3

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Reactor 2 System (P127)

Activity Description: Emulsion Polymerization Process Producing Adhesives

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 2 system with condenser	OAC rule 3745-31-05(A)(3), (PTI 01-08188)	Organic compound (OC) emissions shall not exceed 6.92 lbs OC/hr and 32.3 lbs OC/day. (See Section A.I.2.a.) OC emissions shall not exceed 5.9 tons OC/yr. There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank. (See Sections A.I.2.b and A.I.2.c.)
	OAC rule 3745-21-07(G)(2)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-07(B)(1)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-08(B)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The reactor and its pre-emulsion tank shall not be operated without the condensers being maintained as required in this permit.

2.b The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the pre-emulsion tank, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid at the completion of adding all pre-emulsion tank batch materials.

2.c For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.

2.d This emissions unit shall use only nonphotochemically reactive cleanup materials, as defined in OAC rule 3745-21-01(C)(5).

II. Operational Restrictions

1. The maximum temperature of the exhaust gases from the condenser, following the reactor, shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35 degrees Celsius or above. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. The peak temperature of the chilled water entering the condenser serving the pre-emulsion tank shall not exceed 17 degrees Celsius at any time. This temperature may be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

3. The pressure setting of the conservation vents shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.

4. The permittee shall maintain an emergency containment system capable of preventing the release of any liquid or solid materials from this emissions unit.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, resin, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the reactor and pre-emulsion tank (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the controlled and uncontrolled emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total controlled and uncontrolled OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

III. Monitoring and/or Record Keeping Requirements (continued)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section A.V.2);

i. the highest temperature of the chilled water entering the condenser serving the pre-emulsion tank, as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;

j. if the temperature of the chilled water entering the condenser serving the pre-emulsion tank does not exceeds 17 degrees Celsius, a control efficiency of 65% for the pre-emulsion tank condenser (from manufacturer's data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank; this calculation and record may also be maintained in the facility records, as required in Section A.III.1.e, and may be adjusted if additional testing is conducted for the condenser serving the reactor pre-emulsion tank;

k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section A.V.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section A.III.1.e;

l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, resin, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections A.III.1.k and A.III.1.l) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank and its associated condenser, temperature control device, and monitoring equipment for each product batch*; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the pre-emulsion tank exceeded 17 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section V.2.

* If the pre-emulsion tank has operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank.

5. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report and for demonstrating compliance with the annual emission limitation in Section A.I.1:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

III. Monitoring and/or Record Keeping Requirements (continued)

6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

7. The permittee shall maintain records of the annual inspections of the conservation vents which document the date of the inspection, findings, corrective actions, and the inspector's name.

8. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following monitoring and record keeping requirements are as stringent as or more stringent than the monitoring and record keeping requirements contained in Permit to Install #01-08188, issued on 6/28/01: Sections A.III.1 through A.III.7. The monitoring and record keeping requirements contained in the above-referenced Permit to Install are subsumed into the monitoring and record keeping requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying monitoring and record keeping requirements in the Permit to Install.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the calculated average hourly organic compound emissions exceeded 6.92 pounds per hour and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the organic compound emissions exceeded 32.3 pounds per day and the actual organic compound emissions for each such day.

The control efficiency shall be demonstrated as required in Section A.V.2; and the quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

2. The permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. The permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

4. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

IV. Reporting Requirements (continued)

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following reporting requirements are as stringent as or more stringent than the reporting requirements contained in Permit to Install #01-08188, issued on 6/28/01: Sections A.IV.1 through A.IV.5. The reporting requirements contained in the above-referenced Permit to Install are subsumed into the reporting requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying reporting requirements in the Permit to Install.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound emissions shall not exceed 6.92 lbs/hr and/or 32.3 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$$Pi = A - B/(C+T)$$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$$Yi = Pi / Pt = XiPi^*/ Pt$$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)]

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)]

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from heating and friction. The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

V. Testing Requirements (continued)

vi. If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser's vapor outlet temperature (measured by the continuous temperature monitor following the reactor) for each product or worst-case product. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch, in the reactor and pre-emulsion tank.

**Vapor outlet temperature of the reactor condenser shall be measured from the exhaust gases from the condenser serving and following the reactor.

**Vapor outlet temperature of the pre-emulsion tank shall be estimated from the chiller water temperature entering the pre-emulsion tank; the vapor outlet temperature shall be assumed to be 3.0 degrees Celsius higher than the chiller water temperature entering the pre-emulsion tank (this a conservative estimate from previous measurements of this difference).

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

V. Testing Requirements (continued)

3. Emission Limitation:
Organic compound emissions shall not exceed 5.9 tons/yr

Applicable Compliance Method:
Compliance shall be demonstrated through the calculations and record keeping requirements found in this permit and with the submission of the annual Fee Emission Report, Section A.III.5. The permittee may demonstrate compliance through the use of the condenser control by applying the estimated efficiency, calculated as required in Section A.V.2.

4. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the reactor is routed to the condenser.

5. Emission Limitation:
There shall be no visible emissions from any stack or outside vent associated with this emission unit or from the room containing the unit, during the addition of solids to the pre-emulsion tank.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22.

6. Pursuant to OAC Rule 3745-77-07(A)(3)(a)(ii), the following testing requirements are as stringent as or more stringent than the testing requirements contained in Permit to Install #01-08188, issued on 6/28/01: Sections A.V.1 through A.V.5. The testing requirements contained in the above-referenced Permit to Install are subsumed into the testing requirements of this operating permit, so that compliance with these requirements constitutes compliance with the underlying testing requirements in the Permit to Install.

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
reactor 2 system with condenser		

2. Additional Terms and Conditions

None

II. Operational Restrictions

1. The permittee shall maintain the emergency containment system, installed to prevent the release of liquids and solid materials from the emission unit, and shall perform an annual inspection to assure the design is adequate to prevent any release of liquids or solids in accordance with good engineering practices.

III. Monitoring and/or Record Keeping Requirements

1. The permit to install for this emissions unit (reactor 8 system) 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 for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant:

Pollutant: vinyl acetate

TLV: 35 mg/m3

Maximum Hourly Emission Rate: 6.92 lbs/hr

Predicted 1-Hour Maximum Ground-Level Concentration: 791.5 ug/m3

MAGLC (adjusted for hours of operation, TLV/14): 833.3 ug/m3

Pollutant: N-Butyl Acrylate

TLV (mg/m3): 10.5

Maximum Hourly Emission Rate (lbs/hr): 1.05

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 111.2

MAGLC (ug/m3): 250

III. Monitoring and/or Record Keeping Requirements (continued)

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. 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:

a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value 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 pollutant with a listed TLV that was proposed in the application and modeled; and

c. 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 permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition, then the permittee shall obtain a final permit to install prior to the change.

3. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Pilot Reactor - Polymer Division (P128)

Activity Description: Emulsion polymerization process producing adhesives equipped with a 58 gallon reactor primarily used for introducing new product lines.

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures
Pilot reactor with condenser	OAC rule 3745-21-07(G)(2)	Organic compound (OC) emissions shall not exceed 8 lbs/hr and 40 lbs/day. (See Section A.I.2.a.)
	OAC rule 3745-17-07(B)(1)	Visible particulate emissions of fugitive dust shall not exceed 20 percent opacity as a 3-minute average, except as provided by rule.
	OAC rule 3745-17-08(B)	Reasonable available control measures (RACM) that are sufficient to minimize or eliminate visible emissions of fugitive dust. (See Sections A.I.2.c and A.I.2.d.)

2. Additional Terms and Conditions

2.a If the permittee applies the reactor condenser's control efficiency to comply with the emission limitations in Section A.I.1 or for the purpose of calculating annual emissions, the permittee shall not operate this emissions unit without the use of the reactor condenser; and it shall be operated as required in Section A.II.1.

2.b If the permittee applies the pre-emulsion tank condenser's control efficiency for the purpose of calculating hourly, daily, and annual emissions, the permittee shall not operate this emissions unit without the use of the pre-emulsion tank condenser; and it shall be operated as required in Section A.II.2.

2.c The permittee shall employ RACM to minimize or eliminate visible emissions of fugitive dust when handling dry raw materials or charging dry raw materials into the pre-emulsion tank, including but not limited to:

i. appropriate house-keeping measures to prevent fugitive dust from becoming airborne; and

ii. immediately closing the lid at the completion of adding all pre-emulsion tank batch materials.

2.d For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank, from the building housing this emissions unit; and records shall be maintained as specified in Section A.III.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.

2. Additional Terms and Conditions (continued)

2.e This emissions unit shall use only nonphotochemically reactive cleanup materials, as defined in OAC rule 3745-21-01(C)(5).

II. Operational Restrictions

1. If the reactor's condenser is used to demonstrate compliance, the maximum temperature of the exhaust gases from the condenser, following the reactor, shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35 degrees Celsius or above. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. If a pre-emulsion tank's condenser is used to demonstrate compliance, the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) shall not exceed 17 degrees Celsius at any time. This temperature may be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

III. Monitoring and/or Record Keeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:

a. the company name, code, and/or identification number for each batch of adhesive, caulk, resin, or other product processed; the date of production; and the number of batches of each product processed;

b. the amount, in pounds, of each organic material added to the reactor and pre-emulsion tank (this may be maintained on the batch sheet);

c. the highest operating temperature reached during the batch run;

d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;

e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:

i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;

ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);

III. Monitoring and/or Record Keeping Requirements (continued)

iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;

iv. the uncontrolled and controlled (if applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section A.III.1.e.iii) are applied and calculated as required in Section A.V.1 and A.V.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);

v. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section A.III.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

f. the actual number of batches of each product processed each day;

g. if not documented as required in Section A.III.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;

h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section A.III.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section A.V.2);

i. the highest temperature of the chilled water entering the condenser serving the pre-emulsion tank, as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;

j. if the temperature of the chilled water entering the condenser serving the pre-emulsion tank does not exceeds 17 degrees Celsius, a control efficiency of 65% for the pre-emulsion tank condenser (from manufacturer's data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank; this calculation and record may also be maintained in the facility records, as required in Section A.III.1.e, and may be adjusted if additional testing is conducted for the condenser serving the reactor pre-emulsion tank;

III. Monitoring and/or Record Keeping Requirements (continued)

k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section A.V.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section A.III.1.e;

l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, misoperation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and

m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section A.III.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section A.V.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section A.III.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections A.V.1 and A.V.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section A.V.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

III. Monitoring and/or Record Keeping Requirements (continued)

2. At the end of each calendar quarter the permittee shall calculate and record the following information for each day of the preceding quarter:

a. the total number of batches of each individual adhesive, caulk, resin, or other product (identified as required in Section A.III.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;

b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:

i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section A.III.1.e;

ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section A.III.1.e, does not exist;

iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or

iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section A.III.1.e);

c. the total actual (controlled* and/or uncontrolled) OC emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section A.V.1 for uncontrolled emissions and as specified in Section A.V.2 for the control efficiency, and calculated using one of the following methods:

i. the sum of the actual OC emissions calculated from all batches run for each day of operation; or

ii. the sum of the actual OC emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections A.III.1.k and A.III.1.l) or for new products; and

d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section A.III.2.c, by the total hours of operation for each day (calculated from Section A.III.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section A.V.1, times the percent control efficiency calculated per Section A.V.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section A.III.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

III. Monitoring and/or Record Keeping Requirements (continued)

3. If the reactor's condenser is used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section A.V.2.

4. If the pre-emulsion tank's condenser is used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank;

b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank and its associated condenser, temperature control device, and monitoring equipment for each product batch*; and

c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the pre-emulsion tank exceeded 17 degrees Celsius at any time, a record of the adjusted control efficiency calculated as required in Section V.2.

* If the pre-emulsion tank has operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank.

5. The permittee shall collect and record the following information on an annual basis, for the purpose of documenting and reporting emissions in the annual Fee Emissions Report:

a. the total number of batches of each product or product group processed in this emissions unit; and

b. the total annual OC emissions, in tons per year, calculated as the sum of the daily OC emissions from Section A.III.2.c, for the calendar year.

III. Monitoring and/or Record Keeping Requirements (continued)

6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the location and color of the emissions;
b. whether the emissions are representative of normal operations;
c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
d. the total duration of any visible emission incident; and
e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

IV. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:

a. an identification of each day during which the average hourly organic compound emissions exceeded 8 pounds per hour and the actual hourly organic compound emissions for each such day; and

b. an identification of each day during which the organic compound emissions exceeded 40 pounds per day and the actual organic compound emissions for each such day.

2. For any batch in which the reactor's condenser is used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. For any batch in which the pre-emulsion tank's condenser is used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

4. The quarterly deviation reports shall be submitted in accordance with the reporting requirements specified in Part I - General Term and Condition A.1.c.ii.

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

Emission Limitation:
Organic compound (OC) emissions shall not exceed 8 lbs/hr and 40 lbs/day.

Applicable Compliance Method:
a. Compliance with the daily and hourly OC emission limitations shall be demonstrated based on the record keeping requirements in Sections A.III.1 and A.III.2.

b. Emissions from each batch shall be calculated as follows:

i. Antoine's Equation (Equation 3-8 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes"), with the constants (A, B, & C) found in "Lange's Handbook of Chemistry", shall be used to calculate the vapor pressure* of each liquid/volatile component:

$Pi = A - B/(C+T)$

where:

Pi = vapor pressure of component i (mmHg)
A,B,C = component-specific constants
T = temperature of liquid (deg C)

*Component vapor pressures may also be derived from a reliable source of vapor pressure/temperature tables such as "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook".

ii. Equation 3-9 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes" (Raoult's Law), shall be used to calculate the mole fraction of a component in the vapor:

$Yi = Pi / Pt = XiPi^*/ Pt$

V. Testing Requirements (continued)

iii. The following equation, which is derived by substituting for Yi from Raoult's Law in Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile OC Emissions from Batch Processes", shall be use to calculate emissions from breathing losses for each liquid volatile component:

Er = [(Xi)(Vr)(Pi*)(MW) / (R)(T)]

iv. Equation 3-7 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the mass emission rate of each volatile component in the displaced gases from each batch:

Er = [(Yi)(Vr)(Pt)(MW) / (R)(T)]

v. Equation 3-15 from the U.S. EPA Guideline Series "Control of Volatile Organic Compound Emissions from Batch Processes", shall be used to calculate the number of moles of gas displaced due to temperature increases from heating and friction. The number of moles shall then be multiplied by the molecular weight and the mole fraction of each volatile component in the mix, to get pounds of each component in the gas displaced from each batch due to heat:

Er = [V {Pa1/T1-Pa2/T2} (Yi)(MW)] / R

where:

Er = mass emission rate (lbs/batch)
Yi = mole fraction of component i in vapor
Xi = mole fraction of component i in liquid
Vr = volumetric gas displacement rate (ft3/batch)
V = volume of vapor in head space (ft3/batch)
R = ideal gas law constant (10.73 ft3 psia/lb mole deg R)
T = operating temperature (deg R)
T1 = initial temperature in vessel (deg R)
T2 = final temperature in vessel (deg R)
Pi = partial pressure of component i (psia)
Pi*= vapor pressure of component i at temperature T (psia)
Pt = total pressure in the vessel vapor space (psia)
Pa1 = initial gas pressure in vessel (psia)
Pa2 = final gas pressure in vessel (psia)
MW = molecular weight (lb/lb mole)

V. Testing Requirements (continued)

vi. If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

c. The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as:

(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi summed for all volatile components) = total pounds OC emitted per batch

d. Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

2. If the condenser's control efficiency is used in the calculation of emissions or in the demonstration of compliance with the limits contained in this permit, the condenser control efficiency shall be determined in accordance with the method below:

Method for Determining Condenser Control Efficiency:
The following equation represents the mass balance around the condenser and calculates the mole fraction of OC in the feed and in the vapor leaving the condenser. If records of these calculations are maintained in the facility records, they need only be performed once for each variation in the inlet temperature (measured as the average operating temperature of each product batch) and condenser's vapor outlet temperature (measured by the continuous temperature monitor following the reactor) for each product or worst-case product. The efficiency, calculated using the following assumptions and formula, shall be subtracted from 100% to calculate the fractional control efficiency of the condenser. If the controlled emission rate is to be calculated, the fractional control efficiency of the condenser shall be multiplied by the total uncontrolled emission rates calculated in Section A.V.1 above.

Mass balance assumptions:

F = liquid/gas feed to the condenser, lb mole
D = gas leaving the condenser, lb mole
W = liquid leaving the condenser, lb mole
z = mole fraction of OC in feed
y = mole fraction of OC in vapor leaving the condenser
x = mole fraction of OC in liquid leaving the condenser

V. Testing Requirements (continued)

x = 1 (assumes that all the liquid condensed is OC)
F = 100 lb moles (arbitrarily set to calculate the pound moles of D and W)

F = D + W; and therefore W = F-D; and substituting for value of "F":

W = 100-D

substituting for W in F(z) = D(y) + W(x):

100z = Dy + (100-D)x
100z = Dy + 100x - Dx
100z-100x = Dy-Dx
100(z-x) = D(y-x)
D = 100(z-x)/(y-x)

The vapor pressures shall be determined using Antoine's equation or vapor pressure/temperature tables (e.g., "Lange's Handbook of Chemistry" or "Perry's Chemical Engineers' Handbook"), at the appropriate inlet and outlet vapor temperatures.

The mole fractions, y and z, can be determined using Raoult's law, if the liquid is assumed to be 100% of the pollutant for which the efficiency is being calculated:

z = vapor pressure of pollutant at the vapor inlet temperature*/760
y = vapor pressure of pollutant at the vapor outlet temperature**/760

efficiency (EF) = in - out / in, or

EF = Fz-Dy/Fz, or

EF = 100z - [100(z-x)/(y-x)]y / 100z

*Vapor inlet temperature shall be measured as the average operating temperature of each product batch, in the reactor and pre-emulsion tank.

**Vapor outlet temperature of the reactor condenser shall be measured from the exhaust gases from the condenser serving and following the reactor.

**Vapor outlet temperature of the pre-emulsion tank shall be estimated from the chiller water temperature entering the pre-emulsion tank; the vapor outlet temperature shall be assumed to be 3.0 degrees Celsius higher than the chiller water temperature entering the pre-emulsion tank (this a conservative estimate from previous measurements of this difference).

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

3. If required, the permittee shall conduct, or have conducted, emission testing for this emissions unit to demonstrate compliance with the hourly emissions rate and/or the control efficiency of the condenser, using Methods 1 through 4 and 18, 25 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. The capture efficiency of the vapor collection system is assumed to be 100% because the headspace of the reactor is routed to the condenser.

V. Testing Requirements (continued)

4. Emission Limitation:
Visible emissions of fugitive dust shall not to exceed 20 percent opacity as a three-minute average, except as provided by rule.

Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

VI. Miscellaneous Requirements

None

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/ Requirements	Applicable Emissions Limitations/Control Measures

2. Additional Terms and Conditions

None

II. Operational Restrictions

None

III. Monitoring and/or Record Keeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

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Tables to Subpart FFFF of Part 63

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Tables to Subpart FFFF of Part 63

Table 1 to Subpart FFFF of Part 63. Emission Limits and Work Practice Standards for Continuous Process Vents

As required in §63.2455, you must meet each emission limit and work practice standard in the following table that applies to your continuous process vents:

For each. . .	For which . . .	Then you must . . .
1. Group 1 continuous process vent	a. Not applicable	i. Reduce emissions of total organic HAP by ≥98 percent by weight or to an outlet concentration ≤20 ppmv as organic HAP or TOC by venting emissions through a closed-vent system to any combination of control devices (except a flare); or ii. Reduce emissions of total organic HAP by venting emissions through a closed vent system to a flare; or iii. Use a recovery device to maintain the TRE above 1.9 for an existing source or above 5.0 for a new source.
2. Halogenated Group 1 continuous process vent stream	a. You use a combustion control device to control organic HAP emissions	i. Use a halogen reduction device after the combustion device to reduce emissions of hydrogen halide and halogen HAP by ≥99 percent by weight, or to ≤0.45 kg/hr, or to ≤20 ppmv; or ii. Use a halogen reduction device before the combustion device to reduce the halogen atom mass emission rate to ≤0.45 kg/hr or to a concentration ≤20 ppmv.
3. Group 2 continuous process vent at an existing source	You use a recovery device to maintain the TRE level >1.9 but ≤5.0	Comply with the requirements in §63.993 and the requirements referenced therein.
4. Group 2 continuous process vent at a new source	a. You use a recovery device to maintain the TRE level >5.0 but ≤8.0	Comply with the requirements in §63.993 and the requirements referenced therein.

Table 2 to Subpart FFFF of Part 63. Emission Limits and Work Practice Standards for Batch Process Vents

As required in §63.2460, you must meet each emission limit and work practice standard in the following table that applies to your batch process vents:

For each . . .	Then you must . . .	And you must . . .
1. Process with Group 1 batch process vents	a. Reduce collective uncontrolled organic HAP emissions from the sum of all batch process vents within the process by ≥98 percent by weight by venting emissions from a sufficient number of the vents through a closed-vent system to any combination of control devices (except a flare); or	Not applicable
	b. Reduce collective uncontrolled organic HAP emissions from the sum of all batch process vents within the process by ≥95 percent by weight by venting emissions from a sufficient number of the vents through a closed-vent system to any combination of recovery devices; or	Not applicable
	c. For all batch process vents within the process that are not controlled by venting through a closed-vent system to a flare or to any other combination of control devices that reduce total organic HAP to an outlet concentration ≤20 ppmv as TOC or total organic HAP, reduce organic HAP emissions by venting emissions from a sufficient number of the vents through a closed-vent system to any combination of recovery devices that reduce collective emissions by ≥95 percent by weight and/or any combination of control devices that reduce collective emissions by ≥98 percent by weight.	Not applicable
2. Halogenated	a. Use a halogen reduction device after	i. Reduce overall emissions of

Group 1 batch process vent for which you use a combustion device to control organic HAP emissions	the combustion control device; or	hydrogen halide and halogen HAP by ≥99 percent; or ii. Reduce overall emissions of hydrogen halide and halogen HAP to ≤0.45 kg/hr; or iii. Reduce overall emissions of hydrogen halide and halogen HAP to a concentration ≤20 ppmv.
	b. Use a halogen reduction device before the combustion control device.	Reduce the halogen atom mass emission rate to ≤0.45 kg/hr or to a concentration ≤20 ppmv.

Table 3 to Subpart FFFF of Part 63. Emission Limits for Hydrogen Halide and Halogen HAP Emissions or PM HAP Emissions From Process Vents

As required in §63.2465, you must meet each emission limit in the following table that applies to your process vents that contain hydrogen halide and halogen HAP emissions or PM HAP emissions:

For each . . .	You must . . .
1. Process with uncontrolled hydrogen halide and halogen HAP emissions from process vents ≥1,000 lb/yr.	Reduce collective hydrogen halide and halogen HAP emissions by ≥99 percent by weight or to an outlet concentration ≤20 ppmv by venting through a closed-vent system to any combination of control devices.
2. Process at a new source with uncontrolled PM HAP emissions from process vents ≥400 lb/yr.	Reduce overall PM HAP emissions by ≥97 percent by weight.

Table 4 to Subpart FFFF of Part 63. Emission Limits for Storage Tanks

As required in §63.2470, you must meet each emission limit in the following table that applies to your storage tanks:

For each . . .	For which . . .	Then you must. . .
1. Group 1 storage tank	a. The maximum true vapor pressure of total HAP at the storage temperature is ≥76.6 kilopascals	i. Reduce total HAP emissions by ≥95 percent by weight or to ≤20ppmv of TOC or organic HAP and ≤20 ppmv of hydrogen halide and halogen HAP by venting emissions through a closed vent system to any combination of control devices (excluding a flare); or ii. Reduce total organic HAP emissions by venting emissions through a closed vent system to a flare; or iii. Reduce total HAP emissions by venting emissions to a fuel gas system or process.
	b. The maximum true vapor pressure of total HAP at the storage temperature is <76.6 kilopascals	i. Comply with the requirements of subpart WW of this part, except as specified in §63.2470; or ii. Reduce total HAP emissions by ≥95 percent by weight or to ≤20 ppmv of TOC or organic HAP and ≤20 ppmv of hydrogen halide and halogen HAP by venting emissions through a closed vent system to any combination of control devices (excluding a flare); or iii. Reduce total organic HAP emissions by venting emissions through a closed vent system to a flare; or iv. Reduce total HAP emissions by venting emissions to a fuel gas system or process.
2. Halogenated vent stream from a Group 1 storage tank	You use a combustion control device to control organic HAP emissions	Meet one of the emission limit options specified in Item 2.a.i or ii. in Table 1 to this subpart.

Table 5 to Subpart FFFF of Part 63. Emission Limits and Work Practice Standards for Transfer Racks

As required in §63.2475, you must meet each emission limit and work practice standard in the following table that applies to your transfer racks:

For each . . .	You must . . .
1. Group 1 transfer rack	a. Reduce emissions of total organic HAP by ≥98 percent by weight or to an outlet concentration ≤20 ppmv as organic HAP or TOC by venting emissions through a closed-vent system to any combination of control devices (except a flare); or b. Reduce emissions of total organic HAP by venting emissions through a closed-vent system to a flare; or c. Reduce emissions of total organic HAP by venting emissions to a fuel gas system or process; or d. Use a vapor balancing system designed and operated to collect organic HAP vapors displaced from tank trucks and railcars during loading and route the collected HAP vapors to the storage tank from which the liquid being loaded originated or to another storage tank connected by a common header.
2. Halogenated Group 1 transfer rack vent stream for which you use a combustion device to control organic HAP emissions	a. Use a halogen reduction device after the combustion device to reduce emissions of hydrogen halide and halogen HAP by ≥99 percent by weight, to ≤0.45 kg/hr, or to ≤20 ppmv; or b. Use a halogen reduction device before the combustion device to reduce the halogen atom mass emission rate to ≤0.45 kg/hr or to a concentration ≤20 ppmv.

Table 6 to Subpart FFFF of Part 63. Requirements for Equipment Leaks

As required in §63.2480, you must meet each requirement in the following table that applies to your equipment leaks:

For all . . .	And that is part of . . .	You must . . .
1. Equipment that is in organic HAP service at an existing source	a. An MCPU with no continuous process vents	i. Comply with the requirements of subpart TT of this part 63 and the requirements referenced therein; or ii. Comply with the requirements of subpart UU of this part 63 and the requirements referenced therein; or iii. Comply with the requirements of 40 CFR part 65, subpart F.
	b. An MCPU with at least one continuous process vent	i. Comply with the requirements of subpart UU of this part 63 and the requirements referenced therein; or ii. Comply with the requirements of 40 CFR part 65, subpart F.
2. Equipment that is in organic HAP service at a new source	a. Any MCPU	i. Comply with the requirements of subpart UU of this part 63 and the requirements referenced therein; or ii. Comply with the requirements of 40 CFR part 65, subpart F.

Table 7 to Subpart FFFF of Part 63. Requirements for Wastewater Streams and Liquid Streams in Open Systems Within an MCPU

As required in §63.2485, you must meet each requirement in the following table that applies to your wastewater streams and liquid streams in open systems within an MCPU:

For each . . .	You must . . .
1. Process wastewater stream	Comply with the requirements in §§63.132 through 63.148 and the requirements referenced therein, except as specified in §63.2485.
2. Maintenance wastewater stream	Comply with the requirements in §63.105 and the requirements referenced therein, except as specified in §63.2485.
3. Liquid stream in an open system within an MCPU	Comply with the requirements in §63.149 and the requirements referenced therein, except as specified in §63.2485.

Table 8 to Subpart FFFF of Part 63. Partially Soluble Hazardous Air Pollutants

As specified in §63.2485, the partially soluble HAP in wastewater that are subject to management and treatment requirements in this subpart FFFF are listed in the following table:

Chemical name . . .	CAS No.
1. 1,1,1-Trichloroethane (methyl chloroform)	71556
2. 1,1,2,2-Tetrachloroethane	79345
3. 1,1,2-Trichloroethane	79005
4. 1,1-Dichloroethylene (vinylidene chloride)	75354
5. 1,2-Dibromoethane	106934
6. 1,2-Dichloroethane (ethylene dichloride)	107062
7. 1,2-Dichloropropane	78875
8. 1,3-Dichloropropene	542756
9. 2,4,5-Trichlorophenol	95954
10. 2-Butanone (MEK)	78933
11. 1,4-Dichlorobenzene	106467
12. 2-Nitropropane	79469
13. 4-Methyl-2-pentanone (MIBK)	108101
14. Acetaldehyde	75070
15. Acrolein	107028
16. Acrylonitrile	107131
17. Allyl chloride	107051
18. Benzene	71432
19. Benzyl chloride	100447
20. Biphenyl	92524
21. Bromoform (tribromomethane)	75252
22. Bromomethane	74839

23. Butadiene	106990
24. Carbon disulfide	75150
25. Chlorobenzene	108907
26. Chloroethane (ethyl chloride)	75003
27. Chloroform	67663
28. Chloromethane	74873
29. Chloroprene	126998
30. Cumene	98828
31. Dichloroethyl ether	111444
32. Dinitrophenol	51285
33. Epichlorohydrin	106898
34. Ethyl acrylate	140885
35. Ethylbenzene	100414
36. Ethylene oxide	75218
37. Ethylidene dichloride	75343
38. Hexachlorobenzene	118741
39. Hexachlorobutadiene	87683
40. Hexachloroethane	67721
41. Methyl methacrylate	80626
42. Methyl-t-butyl ether	1634044
43. Methylene chloride	75092
44. N-hexane	110543
45. N,N-dimethylaniline	121697
46. Naphthalene	91203
47. Phosgene	75445
48. Propionaldehyde	123386
49. Propylene oxide	75569

50. Styrene	100425
51. Tetrachloroethylene (perchloroethylene)	79345
52. Tetrachloromethane (carbon tetrachloride)	56235
53. Toluene	108883
54. Trichlorobenzene (1,2,4-)	120821
55. Trichloroethylene	79016
56. Trimethylpentane	540841
57. Vinyl acetate	108054
58. Vinyl chloride	75014
59. Xylene (m)	108383
60. Xylene (o)	95476
61. Xylene (p)	106423

Table 9 to Subpart FFFF of Part 63. Soluble Hazardous Air Pollutants

As specified in §63.2485, the soluble HAP in wastewater that are subject to management and treatment requirements of this subpart FFFF are listed in the following table:

Chemical name . . .	CAS No.
1. Acetonitrile	75058
2. Acetophenone	98862
3. Diethyl sulfate	64675
4. Dimethyl hydrazine (1,1)	58147
5. Dimethyl sulfate	77781
6. Dinitrotoluene (2,4)	121142
7. Dioxane (1,4)	123911
8. Ethylene glycol dimethyl ether	
9. Ethylene glycol monobutyl ether acetate	
10. Ethylene glycol monomethyl ether acetate	
11. Isophorone	78591
12. Methanol	67561
13. Nitrobenzene	98953
14. Toluidine (o-)	95534
15. Triethylamine	121448

Table 10 to Subpart FFFF of Part 63. Work Practice Standards for Heat Exchange Systems

As required in §63.2490, you must meet each requirement in the following table that applies to your heat exchange systems:

For each . . .	You must . . .
Heat exchange system, as defined in §63.101	Comply with the requirements of §63.104 and the requirements referenced therein, except as specified in §63.2490.

Table 11 to Subpart FFFF of Part 63. Requirements for Reports

As required in §63.2520(a) and (b), you must submit each report that applies to you on the schedule shown in the following table:

You must submit a(n)	The report must contain...	You must submit the report...
1. Precompliance report	The information specified in §63.2520(c).	At least 6 months prior to the compliance date; or for new sources, with the application for approval of construction or reconstruction.
2. Notification of compliance status report	The information specified in §63.2520(d)	No later than 150 days after the compliance date specified in §63.2445.
3. Compliance report	The information specified in §63.2520(e)	Semiannually according to the requirements in §63.2520(b).

Table 12 to Subpart FFFF of Part 63. Applicability of General Provisions to Subpart FFFF

As specified in §63.2540, the parts of the General Provisions that apply to you are shown in the following table:

Citation	Subject	Explanation
§63.1	Applicability	Yes
§63.2	Definitions	Yes
§63.3	Units and Abbreviations	Yes
§63.4	Prohibited Activities	Yes
§63.5	Construction/ Reconstruction	Yes
§63.6(a)	Applicability	Yes
§63.6(b)(1)-(4)	Compliance Dates for New and Reconstructed sources	Yes
§63.6(b)(5)	Notification	Yes
§63.6(b)(6)	[Reserved]	
§63.6(b)(7)	Compliance Dates for New and Reconstructed Area Sources That Become Major	Yes
§63.6(c)(1)-(2)	Compliance Dates for Existing Sources	Yes
§63.6(c)(3)-(4)	[Reserved]	
§63.6(c)(5)	Compliance Dates for Existing Area Sources That Become Major	Yes
§63.6(d)	[Reserved]	
§63.6(e)(1)-(2)	Operation & Maintenance	Yes
§63.6(e)(3)(i), (ii), and (v) through (viii)	Startup, Shutdown, and Malfunction Plan (SSMP)	Yes, except information regarding Group 2 emission points and equipment leaks is not required in the SSMP, as specified in §63.2525(j).
§63.6(e)(3)(iii) and (iv)	Recordkeeping and Reporting During SSM	No, §63.998(d)(3) and 63.998(c)(1)(ii)(D) through (G)

		specify the recordkeeping requirement for SSM events, and §63.2520(e)(4) specifies reporting requirements.
§63.6(f)(1)	Compliance Except During SSM	Yes
§63.6(f)(2)-(3)	Methods for Determining Compliance	Yes
§63.6(g)(1)-(3)	Alternative Standard	Yes
§63.6(h)	Opacity/Visible Emission (VE) Standards	Only for flares for which Method 22 observations are required as part of a flare compliance assessment.
§63.6(i)(1)-(14)	Compliance Extension	Yes
§63.6(j)	Presidential Compliance Exemption	Yes
§63.7(a)(1)-(2)	Performance Test Dates	Yes, except substitute 150 days for 180 days.
§63.7(a)(3)	Section 114 Authority	Yes, and this paragraph also applies to flare compliance assessments as specified under §63.997(b)(2).
§63.7(b)(1)	Notification of Performance Test	Yes
§63.7(b)(2)	Notification of Rescheduling	Yes
§63.7(c)	Quality Assurance/Test Plan	Yes, except the test plan must be submitted with the notification of the performance test if the control device controls batch process vents.
§63.7(d)	Testing Facilities	Yes
§63.7(e)(1)	Conditions for Conducting Performance Tests	Yes, except that performance tests for batch process vents must be conducted under worst-case conditions as specified in §63.2460.
§63.7(e)(2)	Conditions for Conducting Performance Tests	Yes
§63.7(e)(3)	Test Run Duration	Yes

§63.7(f)	Alternative Test Method	Yes
§63.7(g)	Performance Test Data Analysis	Yes
§63.7(h)	Waiver of Tests	Yes
§63.8(a)(1)	Applicability of Monitoring Requirements	Yes
§63.8(a)(2)	Performance Specifications	Yes
§63.8(a)(3)	[Reserved]	
§63.8(a)(4)	Monitoring with Flares	Yes
§63.8(b)(1)	Monitoring	Yes
§63.8(b)(2)-(3)	Multiple Effluents and Multiple Monitoring Systems	Yes
§63.8(c)(1)	Monitoring System Operation and Maintenance	Yes
§63.8(c)(1)(i)	Routine and Predictable SSM	Yes
§63.8(c)(1)(ii)	SSM not in SSMP	Yes
§63.8(c)(1)(iii)	Compliance with Operation and Maintenance Requirements	Yes
§63.8(c)(2)-(3)	Monitoring System Installation	Yes
§63.8(c)(4)	CMS Requirements	No. CMS requirements are specified in referenced subparts G and SS of this part 63.
§63.8(c)(4)(i)-(ii)		Only for the alternative standard, but §63.8(c)(4)(i) does not apply because the alternative standard does not require continuous opacity monitoring systems (COMS).
§63.8(c)(5)	COMS Minimum Procedures	No. Subpart FFFF does not contain opacity or VE limits.
§63.8(c)(6)	CMS Requirements	Only for the alternative standard in §63.2505.
§63.8(c)(7)-(8)	CMS Requirements	Only for the alternative standard in §63.2505. Requirements for CPMS are specified in referenced

		subparts G and SS of this part 63.
§63.8(d)	CMS Quality Control	Only for the alternative standard in §63.2505.
§63.8(e)	CMS Performance Evaluation	Only for the alternative standard in §63.2505, but §63.8(e)(5)(ii) does not apply because the alternative standard does not require COMS.
§63.8(f)(1)-(5)	Alternative Monitoring Method	Yes, except you may also request approval using the precompliance report.
§63.8(f)(6)	Alternative to Relative Accuracy Test	Only applicable when using CEMS to demonstrate compliance, including the alternative standard in §63.2505.
§63.8(g)(1)-(4)	Data Reduction	Only when using CEMS, including for the alternative standard in §63.2505, except that the requirements for COMS do not apply because subpart FFFF has no opacity or VE limits, and §63.8(g)(2) does not apply because data reduction requirements for CEMS are specified in §63.2450(j).
§63.8(g)(5)	Data Reduction	No. Requirements for CEMS are specified in §63.2450(j). Requirements for CPMS are specified in referenced subparts G and SS of this part 63.
§63.9(a)	Notification Requirements	Yes
§63.9(b)(1)-(5)	Initial Notifications	Yes
§63.9(c)	Request for Compliance Extension	Yes
§63.9(d)	Notification of Special Compliance Requirements	Yes

	for New Source	
§63.9(e)	Notification of Performance Test	Yes
§63.9(f)	Notification of VE/Opacity Test	No. Subpart FFFF does not contain opacity or VE limits.
§63.9(g)	Additional Notifications When Using CMS	Only for the alternative standard in §63.2505.
§63.9(h)(1)-(6)	Notification of Compliance Status	Yes, except subpart FFFF has no opacity or VE limits, and §63.9(h)(2) does not apply because §63.2520(d) specifies the required contents and due date of the notification of compliance status report.
§63.9(i)	Adjustment of Submittal Deadlines	Yes
§63.9(j)	Change in Previous Information	No, §63.2520(e) specifies reporting requirements for process changes.
§63.10(a)	Recordkeeping/ Reporting	Yes
§63.10(b)(1)	Recordkeeping/ Reporting	Yes
§63.10(b)(2)(i)-(ii), (iv), (v)	Records related to SSM	No, §§63.998(d)(3) and 63.998(c)(1)(ii)(D) through (G) specify recordkeeping requirements for periods of SSM.
§63.10(b)(2)(iii)	Records related to maintenance of air pollution control equipment	Yes
§63.10(b)(2)(vi), (x), and (xi)	CMS Records	Only for CEMS; requirements for CPMS are specified in referenced subparts G and SS of this part 63.
§63.10(b)(2)(vii)-(ix)	Records	Yes
§63.10(b)(2)(xii)	Records	Yes

§63.10(b)(2)(xiii)	Records	Only for the alternative standard in §63.2505.
§63.10(b)(2)(xiv)	Records	Yes
§63.10(b)(3)	Records	Yes
§63.10(c)(1)-(6),(9)-(15)	Records	Only for the alternative standard in §63.2505.
§63.10(c)(7)-(8)	Records	No. Recordkeeping requirements are specified in §63.2525.
§63.10(d)(1)	General Reporting Requirements	Yes
§63.10(d)(2)	Report of Performance Test Results	Yes
§63.10(d)(3)	Reporting Opacity or VE Observations	No. Subpart FFFF does not contain opacity or VE limits.
§63.10(d)(4)	Progress Reports	Yes
§63.10(d)(5)(i)	Periodic Startup, Shutdown, and Malfunction Reports	No, §63.2520(e)(4) and (5) specify the SSM reporting requirements.
§63.10(d)(5)(ii)	Immediate SSM Reports	No
§63.10(e)(1)-(2)	Additional CMS Reports	Only for the alternative standard, but §63.10(e)(2)(ii) does not apply because the alternative standard does not require COMS.
§63.10(e)(3)	Reports	No. Reporting requirements are specified in §63.2520.
§63.10(e)(3)(i)-(iii)	Reports	No. Reporting requirements are specified in §63.2520.
§63.10(e)(3)(iv)-(v)	Excess Emissions Reports	No. Reporting requirements are specified in §63.2520.
§63.10(e)(3)(iv)-(v)	Excess Emissions Reports	No. Reporting requirements are specified in §63.2520.
§63.10(e)(3)(vi)-(viii)	Excess Emissions Report and Summary Report	No. Reporting requirements are specified in §63.2520.
§63.10(e)(4)	Reporting COMS data	No. Subpart FFFF does not contain opacity or VE limits.
§63.10(f)	Waiver for	Yes

	Recordkeeping/ Reporting	
§63.11	Flares	Yes
§63.12	Delegation	Yes
§63.13	Addresses	Yes
§63.14	Incorporation by Reference	Yes
§63.15	Availability of Information	Yes

Tables to Subpart HHHHH of Part 63

Table 1 to Subpart HHHHH of Part 63 - Emission Limits and Work Practice Standards for Process Vessels

Table 2 to Subpart HHHHH of Part 63 - Emission Limits and Work Practice Standards for Storage Tanks

Table 3 to Subpart HHHHH of Part 63 - Requirements for Equipment Leaks

Table 4 to Subpart HHHHH of Part 63 - Emission Limits and Work Practice Standards for Wastewater Streams

Table 5 to Subpart HHHHH of Part 63 - Emission Limits and Work Practice Standards for Transfer Operations

Table 6 to Subpart HHHHH of Part 63 - Requirements for Heat Exchange Systems

Table 7 to Subpart HHHHH of Part 63 - Partially Soluble Hazardous Air Pollutants

Table 8 to Subpart HHHHH of Part 63 - Soluble Hazardous Air Pollutants

Table 9 to Subpart HHHHH of Part 63 - Requirements for Reports

Table 10 to Subpart HHHHH of Part 63 - Applicability of General Provisions to Subpart HHHHH

Tables to Subpart HHHHH of Part 63

Table 1 to Subpart HHHHH of Part 63. Emission Limits and Work Practice Standards for Process Vessels

As required in §63.8005, you must meet each emission limit and work practice standard in the following table that applies to your process vessels:

For each. . .	You must . . .	And you must. . .
1. Portable process vessel at an existing source	a. Equip the vessel with a cover or lid that must be in place at all times when the vessel contains a HAP.	Non applicable
2. Stationary process vessel at an existing source	a. Equip the vessel with a cover or lid that must be in place at all times when the vessel contains a HAP; or	i. Considering both capture and any combination of control (except a flare), reduce emissions by ≥75 percent by weight for each HAP with a vapor pressure ≥0.6 kPa and by ≥60 percent for each HAP with a vapor pressure <0.6 kPa.
	b. Equip the vessel with a tightly fitting vented cover or lid that must be closed at all times when the vessel contains HAP.	i. Reduce emissions of each HAP with a vapor pressure ≥0.6 kPa by ≥75 percent by weight and each HAP with a vapor pressure <0.6 kPa by ≥60 percent by weight by venting emissions through a closed-vent system to any combination of control devices (except a flare); or ii. Reduce emissions of total organic HAP by venting emissions from a non-halogenated vent stream through a closed-vent system to a flare; or iii. Reduce emissions of total organic HAP by venting emissions through a closed-vent system to a condenser that reduces the outlet gas temperature to: <10°C if the process vessel contains HAP with

		a partial pressure <0.6 kPa, or <2°C if the process vessel contains HAP with a partial pressure ≥0.6 kPa and <17.2 kPa, or <-5°C if the process vessel contains HAP with a partial pressure ≥17.2 kPa.
3. Portable and stationary process vessel at a new source	a. Equip the vessel with a tightly fitting vented cover or lid that must be closed at all times when the vessel contains HAP.	i. Reduce emissions of total HAP by ≥95 percent by weight by venting emissions through a closed-vent system to any combination of control devices (except a flare); or ii. Reduce emissions of total organic HAP by venting emissions from a non-halogenated vent stream through a closed-vent system to a flare; or iii. Reduce emissions of total organic HAP by venting emissions through a closed-vent system to a condenser that reduces the outlet gas temperature to: <-4°C if the process vessel contains HAP with a partial pressure <0.7 kPa, or <-20°C if the process vessel contains HAP with a partial pressure ≥0.7 kPa and <17.2 kPa, or <-30°C if the process vessel contains HAP with a partial pressure ≥17.2 kPa.
4. Halogenated vent steam from a process vessel subject to the requirements of item 2 or 3 of this table for which you use a combustion control device to control organic HAP emissions	a. Use a halogen reduction device after the combustion control device; or	i. Reduce overall emissions of hydrogen halide and halogen HAP by ≥95 percent; or ii. Reduce overall emissions of hydrogen halide and halogen HAP to ≤0.45 kilogram per hour (kg/hr).
	b. Use a halogen reduction device before the combustion control device	Reduce the halogen atom mass emission rate to ≤0.45 kg/hr.

Table 2 to Subpart HHHHH of Part 63. Emission Limits for Storage Tanks

As required in §63.8010, you must meet each emission limit in the following table that applies to your storage tanks:

For each. . .	Then you must. . .
1. Group 1a storage tank.	a. Comply with the requirements of subpart WW of this part, except as specified in §63.8010(b); or b. Reduce total organic HAP emissions from the storage tank by ≥90 percent by weight by venting emissions through a closed-vent system to any combination of control devices (excluding a flare); or c. Reduce total organic HAP emissions from the storage tank by venting emissions from a non-halogenated vent stream through a closed-vent system to a flare.
2. Group 1b storage tank.	a. Comply with the requirements of subpart WW of this part, except as specified in §63.8010(b); or b. Reduce total organic HAP emissions from the storage tank by ≥80 percent by weight by venting emissions through a closed-vent system to any combination of control devices (excluding a flare); or c. Reduce total organic HAP emissions from the storage tank by venting emissions from a non-halogenated vent stream through a closed-vent system to a flare.

Table 3 to Subpart HHHHH of Part 63. Requirements for Equipment Leaks

As required in §63.8015, you must meet each requirement in the following table that applies to your equipment leaks:

For all . . .	You must . . .
1. Equipment that is in organic HAP service at an existing source.	a. Comply with the requirements in §§63.424(a) through (d) and 63.428(e), (f), and (h)(4), except as specified in §63.8015(b); or b. Comply with the requirements of subpart TT of this part; or c. Comply with the requirements of subpart UU of this part, except as specified in §63.8015(c) and (d).
2. Equipment that is in organic HAP service at a new source.	a. Comply with the requirements of subpart TT of this part; or b. Comply with the requirements of subpart UU of this part, except as specified in §63.8015(c) and (d).

Table 4 to Subpart HHHHH of Part 63. Emission Limits and Work Practice Standards for Wastewater Streams

As required in §63.8020, you must meet each emission limit and work practice standard in the following table that applies to your wastewater streams:

For each . . .	You must . . .
1. Wastewater tank used to store a Group 1 wastewater stream	a. Maintain a fixed roof, which may have openings necessary for proper venting of the tank, such as pressure/vacuum vent or j-pipe vent.
2. Group 1 wastewater stream	a. Convey using hard-piping and treat the wastewater as a hazardous waste in accordance with 40 CFR part 264, 265, or 266 either onsite or offsite; or b. If the wastewater contains <50 ppmw of partially soluble HAP, you may elect to treat the wastewater in an enhanced biological treatment system that is located either onsite or offsite.

Table 5 to Subpart HHHHH of Part 63. Emission Limits and Work Practice Standards for Transfer Operations

As required in §63.8025, you must meet each emission limit and work practice standard in the following table that applies to your transfer operations:

For each . . .	You must . . .
1. Group 1 transfer operation vent stream	a. Reduce emissions of total organic HAP by ≥75 percent by weight by venting emissions through a closed-vent system to any combination of control devices (except a flare); or b. Reduce emissions of total organic HAP by venting emissions from a non-halogenated vent stream through a closed-vent system to a flare; or c. Use a vapor balancing system designed and operated to collect organic HAP vapors displaced from tank trucks and railcars during loading and route the collected HAP vapors to the storage tank from which the liquid being loaded originated or to another storage tank connected by a common header.
2. Halogenated Group 1 transfer operation vent stream for which you use a combustion device to control organic HAP emissions.	a. Use a halogen reduction device after the combustion device to reduce emissions of hydrogen halide and halogen HAP by ≥95 percent by weight or to ≤0.45 kg/hr; or b. Use a halogen reduction device before the combustion device to reduce the halogen atom mass emission rate to ≤0.45 kg/hr.

Table 6 to Subpart HHHHH of Part 63. Requirements for Heat Exchange Systems

As required in §63.8030, you must meet each requirement in the following table that applies to your heat exchange systems:

For each . . .	You must . . .
Heat exchange system, as defined in §63.101	Comply with the requirements in §63.104, except as specified in §63.8030.

Table 7 to Subpart HHHHH of Part 63. Partially Soluble Hazardous Air Pollutants

As specified in §63.8020, the partially soluble HAP in wastewater that are subject to management and treatment requirements in this subpart are listed in the following table:

Chemical name . . .	CAS No.
1. 1,1,1-Trichloroethane (methyl chloroform)	71556
2. 1,1,2,2-Tetrachloroethane	79345
3. 1,1,2-Trichloroethane	79005
4. 1,1-Dichloroethylene (vinylidene chloride)	75354
5. 1,2-Dibromoethane	106934
6. 1,2-Dichloroethane (ethylene dichloride)	107062
7. 1,2-Dichloropropane	78875
8. 1,3-Dichloropropene	542756
9. 2,4,5-Trichlorophenol	95954
10. 2-Butanone (MEK)	78933
11. 1,4-Dichlorobenzene	106467
12. 2-Nitropropane	79469
13. 4-Methyl-2-pentanone (MIBK)	108101
14. Acetaldehyde	75070
15. Acrolein	107028
16. Acrylonitrile	107131
17. Allyl chloride	107051
18. Benzene	71432
19. Benzyl chloride	100447
20. Biphenyl	92524
21. Bromoform (tribromomethane)	75252

22. Bromomethane	74839
23. Butadiene	106990
24. Carbon disulfide	75150
25. Chlorobenzene	108907
26. Chloroethane (ethyl chloride)	75003
27. Chloroform	67663
28. Chloromethane	74873
29. Chloroprene	126998
30. Cumene	98828
31. Dichloroethyl ether	111444
32. Dinitrophenol	51285
33. Epichlorohydrin	106898
34. Ethyl acrylate	140885
35. Ethylbenzene	100414
36. Ethylene oxide	75218
37. Ethylidene dichloride	75343
38. Hexachlorobenzene	118741
39. Hexachlorobutadiene	87683
40. Hexachloroethane	67721
41. Methyl methacrylate	80626
42. Methyl-t-butyl ether	1634044
43. Methylene chloride	75092
44. N-hexane	110543
45. N,N-dimethylaniline	121697
46. Naphthalene	91203
47. Phosgene	75445
48. Propionaldehyde	123386

49. Propylene oxide	75569
50. Styrene	100425
51. Tetrachloroethylene (perchloroethylene)	79345
52. Tetrachloromethane (carbon tetrachloride)	56235
53. Toluene	108883
54. Trichlorobenzene (1,2,4-)	120821
55. Trichloroethylene	79016
56. Trimethylpentane	540841
57. Vinyl acetate	108054
58. Vinyl chloride	75014
59. Xylene (m)	108383
60. Xylene (o)	95476
61. Xylene (p)	106423

Table 8 to Subpart HHHHH of Part 63. Soluble Hazardous Air Pollutants

As specified in §63.8020, the soluble HAP in wastewater that are subject to management and treatment requirements of this subpart are listed in the following table:

Chemical name . . .	CAS No.
1. Acetonitrile	75058
2. Acetophenone	98862
3. Diethyl sulfate	64675
4. Dimethyl hydrazine (1,1)	58147
5. Dimethyl sulfate	77781
6. Dinitrotoluene (2,4)	121142
7. Dioxane (1,4)	123911
8. Ethylene glycol dimethyl ether	
9. Ethylene glycol monobutyl ether acetate	
10. Ethylene glycol monomethyl ether acetate	
11. Isophorone	78591
12. Methanol	67561
13. Nitrobenzene	98953
14. Toluidine (o-)	95534
15. Triethylamine	121448

Table 9 to Subpart HHHHH of Part 63. Requirements for Reports

As required in §63.8075(a) and (b), you must submit each report that applies to you on the schedule shown in the following table:

You must submit a	The report must contain...	You must submit the report...
1. Precompliance report	The information specified in §63.8075(c).	At least 6 months prior to the compliance date; or for new sources, with the application for approval of construction or reconstruction.
2. Notification of compliance status report	The information specified in §63.8075(d)	No later than 150 days after the compliance date specified in §63.7995.
3. Compliance report	The information specified in §63.8075(e).	Semiannually according to the requirements in §63.8075(b).

Table 10 to Subpart HHHHH of Part 63. Applicability of General Provisions to Subpart HHHHH

As specified in §63.8095, the parts of the General Provisions that apply to you are shown in the following table:

Citation	Subject	Explanation
§63.1	Applicability	Yes
§63.2	Definitions	Yes
§63.3	Units and Abbreviations	Yes
§63.4	Prohibited Activities	Yes
§63.5	Construction/ Reconstruction	Yes
§63.6(a)	Applicability	Yes
§63.6(b)(1)-(4)	Compliance Dates for New and Reconstructed sources	Yes
§63.6(b)(5)	Notification	Yes
§63.6(b)(6)	[Reserved]	
§63.6(b)(7)	Compliance Dates for New and Reconstructed Area Sources That Become Major	Yes
§63.6(c)(1)-(2)	Compliance Dates for Existing Sources	Yes
§63.6(c)(3)-(4)	[Reserved]	
§63.6(c)(5)	Compliance Dates for Existing Area Sources That Become Major	Yes
§63.6(d)	[Reserved]	
§63.6(e)(1)-(2)	Operation & Maintenance	Yes

§63.6(e)(3)(i), (ii), and (v) through (viii)	SSMP	Yes, except information regarding Group 2 emission points and equipment leaks is not required in the SSMP, as specified in §63.8080(f).
§63.6(e)(3)(iii) and (iv)	Recordkeeping and Reporting During Startup, Shutdown, and Malfunction (SSM)	No, §§63.998(d)(3) and 63.998(c)(1)(ii)(D) through (G) specify the recordkeeping requirement for SSM events, and §63.8075(e)(5) specifies reporting requirements.
§63.6(f)(1)	Compliance Except During SSM	Yes
§63.6(f)(2)-(3)	Methods for Determining Compliance	Yes
§63.6(g)(1)-(3)	Alternative Standard	Yes
§63.6(h)	Opacity/Visible Emission (VE) Standards	Only for flares for which Method 22 observations are required as part of a flare compliance assessment.
§63.6(i)(1)-(14)	Compliance Extension	Yes
§63.6(j)	Presidential Compliance Exemption	Yes
§63.7(a)(1)-(2)	Performance Test Dates	Yes, except substitute 150 days for 180 days.
§63.7(a)(3)	CAA Section 114 Authority	Yes, and this paragraph also applies to flare compliance assessments as specified under §63.997(b)(2).
§63.7(b)(1)	Notification of Performance Test	Yes
§63.7(b)(2)	Notification of Rescheduling	Yes
§63.7(c)	Quality Assurance/Test Plan	Yes, except the test plan must be submitted with the notification of the performance test if the control device controls process vessels.
§63.7(d)	Testing Facilities	Yes
§63.7(e)(1)	Conditions for Conducting Performance Tests	Yes, except that performance tests for process vessels must be conducted under worst-case conditions as specified in §63.8005.

§63.7(e)(2)	Conditions for Conducting Performance Tests	Yes
§63.7(e)(3)	Test Run Duration	Yes
§63.7(f)	Alternative Test Method	Yes
§63.7(g)	Performance Test Data Analysis	Yes
§63.7(h)	Waiver of Tests	Yes
§63.8(a)(1)	Applicability of Monitoring Requirements	Yes
§63.8(a)(2)	Performance Specifications	Yes
§63.8(a)(3)	[Reserved]	
§63.8(a)(4)	Monitoring with Flares	Yes
§63.8(b)(1)	Monitoring	Yes
§63.8(b)(2)-(3)	Multiple Effluents and Multiple Monitoring Systems	Yes
§63.8(c)(1)	Monitoring System Operation and Maintenance	Yes
§63.8(c)(1)(i)	Maintain and operate CMS	Yes
§63.8(c)(1)(ii)	Routine repairs	Yes
§63.8(c)(1)(iii)	SSMP for CMS	Yes
§63.8(c)(2)-(3)	Monitoring System Installation	Yes
§63.8(c)(4)	Requirements	Only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63. This subpart does not contain requirements for continuous opacity monitoring systems (COMS).
§63.8(c)(4)(i)	CMS Requirements	No. This subpart does not require COMS.
§63.8(c)(4)(ii)	CMS requirements	Yes
§63.8(c)(5)	COMS Minimum Procedures	No. This subpart does not contain opacity or VE limits.

§63.8(c)(6)	CMS Requirements	Only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
§63.8(c)(7)-(8)	CMS Requirements	Only for CEMS. Requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
§63.8(d)	CMS Quality Control	Only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
§63.8(e)	CMS Performance Evaluation	Section 63.8(e)(6)(ii) does not apply because this subpart does not require COMS. Other sections apply only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
§63.8(f)(1)-(5)	Alternative Monitoring Method	Yes, except you may also request approval using the precompliance report
§63.8(f)(6)	Alternative to Relative Accuracy Test	Only for CEMS.
§63.8(g)(1)-(4)	Data Reduction	Only when using CEMS, except §63.8(g)(2) does not apply because data reduction requirements for CEMS are specified in §63.8000(d)(4)(iv). The requirements for COMS do not apply because this subpart has no opacity or VE limits.
§63.8(g)(5)	Data Reduction	No. Requirements for CEMS are specified in §63.8000(d)(4). Requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
§63.9(a)	Notification Requirements	Yes
§63.9(b)(1)-(5)	Initial Notifications	Yes
§63.9(c)	Request for Compliance Extension	Yes
§63.9(d)	Notification of Special Compliance	Yes

	Requirements for New Source	
§63.9(e)	Notification of Performance Test	Yes
§63.9(f)	Notification of VE/Opacity Test	No. This subpart does not contain opacity or VE limits.
§63.9(g)	Additional Notifications When Using CMS	Only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
§63.9(h)(1)-(6)	Notification of Compliance Status	Yes, except this subpart has no opacity or VE limits, and §63.9(h)(2) does not apply because §63.8075(d) specifies the required contents and due date of the notification of compliance status report.
§63.9(i)	Adjustment of Submittal Deadlines	Yes
§63.9(j)	Change in Previous Information	No, §63.8075(e)(8) specifies reporting requirements for process changes.
§63.10(a)	Recordkeeping/ Reporting	Yes
§63.10(b)(1)	Recordkeeping/ Reporting	Yes
§63.10(b)(2)(i)-(iv)	Records related to SSM	No, §§63.998(d)(3) and 63.998(c)(1)(ii)(D) through (G) specify recordkeeping requirements for periods of SSM.
§63.10(b)(2)(iii)	Records related to maintenance of air pollution control equipment	Yes
§63.10(b)(2)(vi), (x), and (xi)	CMS Records	Only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
§63.10(b)(2)(vii)-(ix)	Records	Yes
§63.10(b)(2)(xii)	Records	Yes

§63.10(b)(2)(xiii)	Records	Yes.
§63.10(b)(2)(xiv)	Records	Yes
§63.10(b)(3)	Records	Yes
§63.10(c)(1)-(6),(9)-(15)	Records	Only for CEMS; requirements for CPMS are specified in referenced subpart SS of 40 CFR part 63.
§63.10(c)(7)-(8)	Records	No. Recordkeeping requirements are specified in §63.8080.
§63.10(d)(1)	General Reporting Requirements	Yes
§63.10(d)(2)	Report of Performance Test Results	Yes
§63.10(d)(3)	Reporting Opacity or VE Observations	No. This subpart does not contain opacity or VE limits.
§63.10(d)(4)	Progress Reports	Yes
§63.10(d)(5)(i)	SSM Reports	No, §63.8075(e)(5) and (6) specify the SSM reporting requirements.
§63.10(d)(5)(ii)	Immediate SSM reports	No
§63.10(e)(1)-(2)	Additional CMS Reports	Only for CEMS, but §63.10(e)(2)(ii) does not apply because this subpart does not require COMS.
§63.10(e)(3)	Reports	No. Reporting requirements are specified in §63.8075.
§63.10(e)(3)(i)-(iii)	Reports	No. Reporting requirements are specified in §63.8075
§63.10(e)(3)(iv)-(v)	Excess Emissions Reports	No. Reporting requirements are specified in §63.8075
§63.10(e)(3)(iv)-(v)	Excess Emissions Reports	No. Reporting requirements are specified in §63.8075
§63.10(e)(3)(vi-viii)	Excess Emissions Report and Summary Report	No. Reporting requirements are specified in §63.8075
§63.10(e)(4)	Reporting COMS data	No. This subpart does not contain opacity or

		VE limits.
§63.10(f)	Waiver for Recordkeeping/Reporting	Yes
§63.11	Flares	Yes
§63.12	Delegation	Yes
§63.13	Addresses	Yes
§63.14	Incorporation by Reference	Yes
§63.15	Availability of Information	Yes