



State of Ohio Environmental Protection Agency

**RE: FINAL PERMIT TO INSTALL
CUYAHOGA COUNTY**

CERTIFIED MAIL

Street Address:

50 West Town Street, Suite 700

Lazarus Gov. Center TELE: (614) 644-3020 FAX: (614) 644-2329

Mailing Address:

Lazarus Gov. Center
P.O. Box 1049

Application No: 13-04683

Fac ID: 1318365229

DATE: 7/5/2007

McGean-Rohco, Incorporated
Jitu Gandhi
2910 Harvard Avenue
Cleveland, OH 44105

Enclosed please find an Ohio EPA Permit to Install which will allow you to install the described source(s) in a manner indicated in the permit. Because this permit contains several conditions and restrictions, I urge you to read it carefully.

The Ohio EPA is urging 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. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of \$70.00 which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

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

Sincerely,

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

CC: USEPA

CLAA



**Permit To Install
Terms and Conditions**

**Issue Date: 7/5/2007
Effective Date: 7/5/2007**

FINAL PERMIT TO INSTALL 13-04683

Application Number: 13-04683
Facility ID: 1318365229
Permit Fee: **\$75**
Name of Facility: McGean-Rohco, Incorporated
Person to Contact: Jitu Gandhi
Address: 2910 Harvard Avenue
Cleveland, OH 44105

Location of proposed air contaminant source(s) [emissions unit(s)]:
**2910 Harvard Avenue
Cleveland, Ohio**

Description of proposed emissions unit(s):
Installation of a new 1,000 gallon multipurpose reactor R-7 with a condenser -- P039.

The above named entity is hereby granted a Permit to Install for the above described emissions unit(s) pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the above described emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Chris Korleski
Director

Part I - GENERAL TERMS AND CONDITIONS

A. Permit to Install General Terms and Conditions

1. Compliance Requirements

The emissions unit(s) identified in this Permit to Install shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

2. Reporting Requirements

The permittee shall submit required reports in the following manner:

- a. Reports of any required monitoring and/or recordkeeping 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 (a) any deviations (excursions) from emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) 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. 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 (i.e., postmarked) quarterly 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.)

3. 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.

4. 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

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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.

5. 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).

6. 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.

7. 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.

8. Termination of Permit to Install

This Permit to Install shall terminate within eighteen months of the effective date of the Permit to Install if the owner or operator has not undertaken a continuing program of installation or modification or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation or modification. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

9. Construction of New Sources(s)

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The proposed emissions unit(s) shall be constructed in strict accordance with the plans and application submitted for this permit to the Director of the Ohio Environmental Protection Agency. There may be no deviation from the approved plans without the express, written approval of the Agency. Any deviations from the approved plans or the above conditions may lead to such sanctions and penalties as provided under Ohio law. Approval of these plans does not constitute an assurance that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources cannot meet the requirements of this permit or cannot meet applicable standards.

If the construction of the proposed emissions unit(s) has already begun or has been completed prior to the date the Director of the Environmental Protection Agency approves the permit application and plans, the approval does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the approved plans. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of the Permit to Install does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Approval of the plans in any case is not to be construed as an approval of the facility as constructed and/or completed. Moreover, issuance of the Permit to Install is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

10. Public Disclosure

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

11. Applicability

This Permit To Install is applicable only to the emissions unit(s) identified in the Permit To Install. Separate Permit To Install for the installation or modification of any other emissions unit(s) are required for any emissions unit for which a Permit To Install is required.

12. Best Available Technology

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

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13. Source Operation and Operating Permit Requirements After Completion of Construction

This facility is permitted to operate each source described by this Permit to Install for a period of up to one year from the date the source commenced operation. This permission to operate is granted only if the facility complies with all requirements contained in this permit and all applicable air pollution laws, regulations, and policies. Pursuant to OAC Chapter 3745-35, the permittee shall submit a complete operating permit application within ninety (90) days after commencing operation of the emissions unit(s) covered by this permit.

14. Construction Compliance Certification

The applicant shall provide Ohio EPA with a written certification (see enclosed form) that the facility has been constructed in accordance with the Permit to Install application and the terms and conditions of the Permit to Install. The certification shall be provided to Ohio EPA upon completion of construction but prior to startup of the source.

15. 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. The permittee shall pay all applicable Permit to Install fees within 30 days after the issuance of this Permit to Install.

B. Permit to Install Summary of Allowable Emissions

The following information summarizes the total allowable emissions, by pollutant, based on the individual allowable emissions of each air contaminant source identified in this permit.

SUMMARY (for informational purposes only)
 TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS

<u>Pollutant</u>	<u>Tons Per Year</u>
PE	3.58
OC	7.3

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PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)**A. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operations(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 specified in narrative form following the table.

Operations, Property, and/or Equipment - (P039) Specialty Chemical Making Vacuum/pressurized Multiple purpose 1000 gallon Reactor R7 and Condenser System Equipped with a Packed Tower Scrubber Using Acidic or Alkaline Scrubber Liquor

Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
OAC rule 3745-17-07(A)(1)(a)	Visible particulate emissions from any stack servicing this emissions unit shall not exceed 20% opacity, as a six-minute average, except as provided by rule.
OAC rule 3745-17-11(A)(2)	Particulate emissions (PE) from wet scrubber (packed tower scrubber) stack shall not exceed 0.817 lb PE/hour.
OAC rule 3745-21-07(G)(2)	Organic compounds (OC) emissions from the wet scrubber stack shall not exceed 8 lbs OC/hr and 40 lbs OC/day.
ORC 3704.03(T)(4)	Less than 10 tons per year for PE and OC each, see A.2.a below.

2. Additional Terms and Conditions

- 2.a The Best Available (BAT) Requirements under OAC rule 3745-31-05(A)(3) do not apply to the air contaminants PE and OC from this emissions unit since the uncontrolled potential to emit PE and OC emissions is less than ten tons per year. And the potential to emit from OAC rule 3745-17-11(A)(2) and OAC rule 3745-21-07(G)(2) is also less than ten tons per year.
- 2.b This emissions unit operates using a batch cycle. The average amount of time for one batch cycle is 720 minutes or 12 hours. The batch cycle varies from approximately one hour to 150 hours.
- 2.c The controlled PE and OC emission rates at potential to emit are less than rule limits; therefore, no monitoring, record keeping or reporting are needed for these limits.

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B. Operational Restrictions

1. The permittee shall operate a wet scrubber, whenever this air emissions unit is generating particulate emissions and/or organic compounds emissions, while the emissions unit is in operation. If acidic emissions are generated while the air emissions unit is in operation, alkaline (having a pH of more than 7) scrubber liquor shall be used to control acidic emissions. If alkaline emissions are generated while the air emissions unit is in operation, acidic scrubber liquor shall be used to control alkaline emissions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate, and maintain equipment to continuously monitor and record the pH of the recirculating scrubber liquor during operation of this emissions unit, including periods of startup and shutdown. The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s). The permittee shall record the pH of the recirculating scrubber liquor on hourly basis, if needed as a backup.

Whenever the monitored value for the pH of the recirculating scrubber liquor deviates from the range specified below, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation: the date and time the deviation began and the magnitude of the deviation at that time, the date(s) the investigation was conducted, the names of the personnel who conducted the investigation, and the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the operation of the control equipment within the acceptable range specified below, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken: a description of the corrective action, the date it was completed, the date and time the deviation ended, the total period of time (in minutes) during which there was a deviation, the pH reading immediately after the corrective action, and the names of the personnel who performed the work. Investigation and records required by this paragraph does not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

The acceptable range for the pH of the recirculating scrubber liquor is between 0 and 7

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(including the end values 0 and 7) when alkaline air pollutants are being controlled; and the acceptable range for the pH of the recirculating scrubber liquor is between 7 and 12 (including the end values 7 and 12) when acidic air pollutants are being controlled.

These ranges are effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by CDAQ. The permittee may request revisions to the ranges based upon information obtained during future operations of this emissions unit. In addition, approved revisions to the ranges will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of an administrative modification.

2. The noted records above shall be maintained at the facility for a period of five years from the date the record was created.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports to the Cleveland Division of Air Quality that identify the following information concerning the operation of the control equipment during the operation of this emissions unit:
 - a. each period of time when the pH reading of the liquor was outside of the range specified by the manufacturer;
 - b. an identification of each incident of deviation described in (a) where a prompt investigation was not conducted;
 - c. an identification of each incident of deviation described in (a) where prompt corrective action, that would bring the pH into compliance with the acceptable range, was determined to be necessary and was not taken; and
 - d. an identification of each incident of deviation described in (a) where proper records were not maintained for the investigation and/or the corrective action.

These quarterly reports shall be submitted (i.e., postmarked) by January 31, April 30, July 31, and October 31 of each year; and each report shall cover the previous calendar quarter.

E. Testing Requirements

1. Compliance with the emission limitations/control requirements in Section A.1 of these terms and conditions shall be determined in accordance with the following methods:
 - a. Emission Limitation:
Visible particulate emissions from any stack servicing this emissions unit shall not exceed 20% opacity, as a six-minute average, except as provided by rule.

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Applicable Compliance Method:

If required by Ohio EPA or Cleveland DAQ, compliance shall be determined by visible emission evaluations performed in accordance with OAC rule 3745-17-03(B)(1) using methods and procedures specified in U.S. EPA Reference Method 9.

- b. Emission Limitations:
Particulate emissions (PE) from wet scrubber (packed tower scrubber) stack shall not exceed 0.817 lb PE/hour.

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Applicable Compliance Method:

The emission limitation is based on the rule. The potential to emit is less than the rule limit; therefore, no record keeping and/or reporting requirements are necessary to ensure compliance with this emission limitation.

R = Ratio of non-OC and non-water raw material to total OC raw material

R = Ratio of uncontrolled PE to uncontrolled OC emissions

$$R = \frac{(\text{lbs of non-OC} + \text{lbs of non-water}) \text{ raw material}}{\text{lb of total OC raw material}}$$

$$R = \frac{J \text{ lbs of uncontrolled PE}}{\text{lb of uncontrolled OC emissions}} = J \frac{\text{lbs PE}}{\text{lb OC}}$$

UncontPE is pounds of uncontrolled PE per hour, lbs PE/hr

UncontOC is the pounds of uncontrolled OC emissions per hour, lbs OC/hr

$$\text{UncontPE} = (R) \times \left(\text{UncontOC} \frac{\text{lbs OC}}{\text{hr}} \right)$$

PECE = Control Efficiency of Wet Scrubber on PE, % = PE Control

Efficiency %

The estimated PE control efficiency is 90% from the scrubber manufacturer.

ActPE is controlled PE or actual PE, lbs PE/hr

$$\text{ActPE} = \text{UncontPE} \times \left(\frac{100 - \text{PECE}\%}{100} \right)$$

Sample Calculation of R

$$R = \frac{237,092 \text{ lbs of non-OC and non-water raw material}}{196,458 \text{ lbs of OC raw material}}$$

$$R = \frac{1.21 \text{ lbs of uncontrolled PE}}{\text{lb of uncontrolled OC emissions}} = 1.21 \frac{\text{lb PE}}{\text{lb OC}}$$

Sample Calculation of UncontPE, lbs PE/hr

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$$\text{UncontPE} = \left(1.21 \frac{\text{lb PE}}{\text{lb OC}} \right) \times \left(0.839 \frac{\text{lb UncontOC}}{\text{hr}} \right)$$

$$\text{UncontPE} = 1.02 \frac{\text{lbs PE}}{\text{hr}}$$

Sample Calculation of actual PE, ActPE, lbs PE/hr

$$\text{ActPE} = 1.02 \frac{\text{lbs PE}}{\text{hr}} \times \frac{100 - \text{PECE}\%}{100}$$

$$\text{ActPE} = 0.102 \frac{\text{lb PE}}{\text{hr}}$$

Where:

J is the pounds of uncontrolled particulate emissions per pound of uncontrolled OC emissions

PECE is the particulate emissions control efficiency in percent

c. Emission Limitations:

Organic compounds (OC) emissions from the wet scrubber stack shall not exceed 8 lbs OC/hr and 40 lbs OC/day.

Applicable Compliance Method:

The emission limitation is based on the rule. The potential to emit is less than the rule limit; therefore, no record keeping and/or reporting requirements are necessary to ensure compliance with this emission limitation.

OC(n) = nth organic compound

OC1 = first organic compound when n = 1

M = vapor pressure of OC1

ParPress(n) = nth partial pressure of OC(n)

ParPress1 = Partial Pressure (dimension less ratio) of organic compound 1 (OC1), psia (pounds per square inch), when n = 1

$$\text{ParPress1} = \frac{\text{M psia of OC1}}{14.7 \text{ psia atmosphere}} \leq 1.0$$

UncontOC(n) = nth uncontrolled OC emissions

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UncontOC1 = Uncontrolled OC Emissions of OC1, lbs OC1/hr, when n = 1

$$\text{UncontOC1} = \left(\text{Material Usage} \frac{\text{lbs}}{\text{hr}} \text{OC1} \right) \times (\text{ParPress1})$$

OCCE = Control Efficiency of Wet Scrubber on OC, % = OC Control Efficiency %

The estimated OC control efficiency is 95% from the scrubber manufacturer.

ActOC(n) = nth ActOC

ActOC1 is controlled OC1 emissions or actual OC1 emissions, lbs OC1/hr, when n= 1

$$\text{ActOC1} = \left(\text{UncontOC1} \frac{\text{lbs OC1}}{\text{hr}} \right) \times \left(\frac{100 - \text{OCCE}\%}{100} \right)$$

ActOC(n)day = nth ActOCday of nth OC

ActOC1day is controlled OC1 emissions or actual OC1 emissions, lbs OC1/day, when n = 1

$$\text{ActOC1day} = \left(\text{ActOC1} \frac{\text{lbs OC}}{\text{hr}} \right) \times \left(\frac{\text{hrs}}{\text{day}} \right)$$

ActOCday is controlled OC emissions or actual emissions, lbs OC/day

$$\text{ActOCday} = \sum_1^n \left(\text{ActOC(n)day} \frac{\text{lbs OC}}{\text{day}} \right)$$

Sample emission calculation of dimethylaminopropylamine

OC1 = dimethylaminopropylamine

$$\text{ParPress1} = \frac{0.12 \text{ psia}}{14.7 \text{ psia}} = 0.00864$$

Material Usage of OC1 = 10 lbs/hr

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$$\text{UncontOC1} = \left(\frac{10 \text{ lbs OC}}{\text{hr}} \right) \times (0.00864) = 0.0864 \frac{\text{lb OC}}{\text{hr}}$$

$$\text{ActOC1} = \left(\frac{0.0864 \text{ lb OC}}{\text{hr}} \right) \times \left(\frac{100 - 95}{100} \right) = 0.00432 \frac{\text{lb OC}}{\text{hr}}$$

$$\text{ActOC1day} = \left(0.00432 \frac{\text{lb OC}}{\text{hr}} \right) \times \left(\frac{12 \text{ hrs}}{\text{day}} \right) = 0.0518 \frac{\text{lbs OC}}{\text{day}}$$

OC2 = isopropanol

$$\text{ParPress2} = \frac{0.64 \text{ psia}}{14.7 \text{ psia}} = 0.0435$$

Material Usage of OC2 = 5 lbs OC/hr

$$\text{UncontOC2} = \left(\frac{5 \text{ lbs OC}}{\text{hr}} \right) \times (0.0435) = 0.218 \frac{\text{lb OC}}{\text{hr}}$$

$$\text{ActOC2} = \left(\frac{0.218 \text{ lb OC}}{\text{hr}} \right) \times \left(\frac{100 - 95}{100} \right) = 0.0109 \frac{\text{lb OC}}{\text{hr}}$$

$$\text{ActOC2day} = \left(0.0109 \frac{\text{lb OC}}{\text{hr}} \right) \times \left(\frac{12 \text{ hrs}}{\text{day}} \right) = 0.1306 \frac{\text{lb OC}}{\text{day}}$$

$$\text{ActOCday} = \text{ActOC1day} + \text{ActOC2day}$$

$$\text{ActOCday} = (0.0518 + 0.1306) \frac{\text{lb OC}}{\text{day}} = 0.182 \frac{\text{lb OC}}{\text{day}}$$

- d. Emission Limitations:
Less than 10 tons per year for PE and OC each.

Applicable Compliance Method:

Multiplying the PE hourly emission rate by 8760 hours of operation per year and dividing by 2000 pounds per ton results in potential emissions that are less than 10 tons/year for particulate emissions. Multiplying the OC daily emission rate by

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365 days of operation per year and dividing by 2000 pounds per ton results in potential emissions that are less than 10 tons/year for OC emissions. Therefore, compliance with the annual emission limitation shall be assumed provided compliance is maintained with the pounds per hour limitation for PE and pounds per day limitation for OC.

F. Miscellaneous Requirements

1. Modeling to demonstrate compliance with the Ohio EPA's "Toxic Air Contaminant Statute", ORC 3704.03(F) was not necessary because the emissions unit's maximum annual emissions for each toxic pollutant will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit to install prior to making a "modification" as defined by OAC rule 3745-31-01. The permittee is hereby advised that a new permit to install application would be required for an emissions unit if changes in the composition of the materials or use of new materials would cause the emissions of any pollutant that is listed under OAC rule 3745-114-01(A) to increase to above 1.0 ton per year.

The actual mass emissions of ammonia shall be determined by using the following calculation for each of the products:

$$\frac{\text{U lbs of uncontrolled NH}_3 \text{ emissions}}{\text{ton of batch material of Y product}} \times \frac{\text{tons of batch material of Y product}}{\text{batch of Y product}}$$

$$= \frac{\text{W lbs of uncontrolled NH}_3 \text{ emissions}}{\text{batch of Y product}}$$

$$\frac{\text{W lbs of uncontrolled NH}_3 \text{ emissions}}{\text{batch of Y product}} \times \frac{(100 - \% \text{ Control Efficiency})}{100}$$

$$= \text{Z lbs of actual NH}_3 \text{ emissions/batch/product}$$

Summation of actual ammonia emissions in pounds of ammonia per month for all products.

Summation of actual ammonia emissions in pounds of ammonia per year for all products.

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The actual annual ammonia emissions in pounds per year divided by 2000 pounds per ton to give actual ammonia emissions in tons per year.

Where

U is the pounds of uncontrolled ammonia emissions per ton of material generated by a particular product;

W is the pounds uncontrolled ammonia emissions per batch of a particular product;

Y is a particular product;

Z is the pounds of actual ammonia emissions per batch of a particular product; and Control Efficiency is the actual or manufacturer's estimate of control efficiency of the scrubber.