



State of Ohio Environmental Protection Agency

**RE: FINAL PERMIT TO INSTALL CERTIFIED MAIL
FRANKLIN COUNTY**

Street Address:

122 S. Front Street

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

Mailing Address:

Lazarus Gov. Center
P.O. Box 1049

Application No: 01-08317

DATE: 1/16/2001

AY Manufacturing
Kent Huang
5200 Crosswind Dr
Columbus, OH 43228

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 by the Director is final and may be appealed to the Ohio Environmental Review Appeals Commission pursuant to Chapter 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 within thirty (30) days after the notice of the Directors 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. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
236 East Town Street, Room 300
Columbus, Ohio 43215

Very truly yours,

Thomas G. Rigo, Manager
Field Operations and Permit Section
Division of Air Pollution Control

CC: USEPA

CDO



Permit To Install

STATE OF OHIO ENVIRONMENTAL PROTECTION AGENCY

FINAL PERMIT TO INSTALL 01-08317

Application Number: 01-08317
APS Premise Number: 0125042110
Permit Fee: **\$200**
Name of Facility: AY Manufacturing
Person to Contact: Kent Huang
Address: 5200 Crosswind Dr
Columbus, OH 43228

Location of proposed air contaminant source(s) [emissions unit(s)]:
5200 Crosswind Dr
Columbus, Ohio

Description of proposed emissions unit(s):
Modification application for K003 topcoat.

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



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 Related to Monitoring and Recordkeeping 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 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.)

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 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)

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 are inadequate 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 prove to be inadequate 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 application must be made to the Director for the installation or modification of any other emissions unit(s).

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.

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 thirty (30) days after commencing operation of the emissions unit(s) covered by this permit.

AY Manufacturing
PTI Application: 01-08317
Issued: 1/16/2001

Facility ID: 0125042110

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>
VOC	4.3 tpy

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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
K003 - Topcoat line with spraybooth and oven for coating motorcycle engines and miscellaneous metal parts with dry filtration system (modification to PTI 01-4050, issued November 4, 1992 and PTI 01-5225, issued November 16, 1994)	OAC rule 3745-31-05(A)(3) OAC rule 3745-21-09(U)	Volatile organic compound emissions shall not exceed 9.5 pounds per hour and 4.3 tons per year, including cleanup. See Part II A.2.a below. See Part II A.2.b below.

2. Additional Terms and Conditions

- 2.a The 9.5 pounds per hour VOC limitation for this emissions unit was established to reflect the hourly potential to emit. Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with this limit.
- 2.b Pursuant to OAC rule 3745-21-09(U)(2)(e)(ii), this emissions unit is exempt from the limits specified in OAC rule 3745-21-09(U) because the unit's maximum daily coating usage is less than ten gallons per day.

B. Operational Restrictions

1. The permittee shall not use more than ten gallons of coating per day in this emissions unit.
2. The permittee shall operate the dry filtration system whenever this emissions unit is in operation.
3. The permittee shall maintain a minimum stack height of thirty six (36) feet aboveground as measured from the ground to the top of the stacks for this emissions unit. All air contaminant

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AY Manufacturing
PTI Application: 01 09217
Issued

Facility ID: 0125042110

Emissions Unit ID: **K003**

emissions from this emissions unit shall be emitted through these stacks.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following information on a monthly basis for the purpose of determining annual VOC emissions:
 - a. The name and identification of each type of coating and cleanup material employed.
 - b. The VOC content of each type of coating employed (excluding water and exempt solvents), as applied, in pounds per gallon.
 - c. The VOC content of each type of cleanup material, in pounds per gallon.
 - d. The number of gallons of each type of coating and cleanup material employed.
 - e. The number of gallons of each type of cleanup material drummed for shipment off-site.
 - f. The total VOC emissions from all coatings and cleanup materials employed, in pounds or tons. i.e., the sum of all coatings and cleanup materials times the respective VOC contents minus the amount of cleanup material drummed for shipment off-site, in pounds or tons (number of gallons of cleanup times the respective VOC content).
2. The permittee shall maintain daily records of the number of gallons of coating employed.
3. The permittee shall maintain daily records that document any time periods when the dry filtration system was not in service when the emissions unit was in operation.
4. The permit to install for this emissions unit (K003) was evaluated based on the actual materials (typically coatings and cleanup 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. 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: 2-6 Dimethyl-4-heptanone (Diisobutyl ketone)

TLV (ug/m3): 145,000

Maximum Hourly Emission Rate (lbs/hr): 5.44

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 712.5

MAGLC (ug/m3): 3452

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 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(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is(are) defined as a modification under the provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

The permittee shall collect, record and retain the following information when it conducts evaluations to determine that the changed emissions unit will 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
- d. The permittee shall collect and record the following information for each change where the air toxic modeling was required pursuant to the Air Toxic Policy:
 - i. background data that describes the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.); and
 - ii. a copy of the resulting computer model runs that show the results of the application of the Air Toxic Policy for the change.

D. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports which identify all exceedances of the annual emission limitation for VOC. These reports shall be submitted by January 30 of the following calendar year.
2. The permittee shall notify the Central District Office in writing of any daily record showing that the dry filtration system was not in service when the emissions unit was in operation. The notification shall include a copy of such record and shall be sent to the Central District Office within 30 days after the event occurs.

E. Testing Requirements

1. Compliance with the emission limitation(s) in Section A.1. of these terms and conditions shall be determined in accordance with the following method(s):
 - a. Emissions Limitation:
Volatile organic compound emissions shall not exceed 9.5 pounds per hour, including clean up.

Applicable Compliance Method:

Compliance with the hourly VOC limit shall be determined by summing the maximum VOC emissions from both coatings and cleanup material. The coating emissions shall be determined by multiplying the maximum VOC content of the coating material used (4.53 lbs VOC/gal) by the maximum usage in an hour (1.2 gal/hr). The emissions from cleanup

Emissions Unit ID: K003

material shall be determined by multiplying the maximum VOC content of the cleanup material employed (8.12 lbs VOC/gal) by the maximum usage in an hour (0.5 gal/hr).

Emission Limitation:

Volatile organic compound emissions shall not exceed 4.3 tons per year, including those emissions from the employment of clean up material.

Applicable Compliance Method:

Compliance with the annual VOC emission limit shall be determined by the summation of the monthly emissions for the calendar year. i.e., the summation of values calculated in C.1.f above for the calendar year.

2. U.S. EPA Method 24 shall be used to determine the VOC content for coatings and cleanup materials. If, pursuant to section 4.3 of Method 24, 40 CFR Part 60, Appendix A, an owner or operator determines that Method 24 cannot be used for a particular coating or cleanup material, the owner or operator shall so notify the Administrator of the U.S. EPA and shall use formulation data for that coating or cleanup material to demonstrate compliance until the U.S. EPA provides alternative analytical procedures or alternative precision statements for Method 24. Note: Method 24 data may be supplied by the coating manufacturer.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those identified in all previously issued permits for this emissions unit.

NEW SOURCE REVIEW FORM B

PTI Number: 01-08317 Facility ID: 0125042110

FACILITY NAME AY Manufacturing

FACILITY DESCRIPTION Modification application for K003 topcoat. CITY/TWP Columbus

SIC CODE 3714 SCC CODE 4-02-025-01 EMISSIONS UNIT ID K003

EMISSIONS UNIT DESCRIPTION Topcoat line with spraybooth and oven for coating motorcycle engines

DATE INSTALLED Modified 1/18/01

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter					
PM ₁₀					
Sulfur Dioxide					
Organic Compounds		9.5 lb/hr	4.3 tpy	9.5 lb/hr	4.3 tpy
Nitrogen Oxides					
Carbon Monoxide					
Lead					
Other: Air Toxics					

APPLICABLE FEDERAL RULES:

NSPS? NESHAP? PSD? OFFSET POLICY?

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?

Enter Determination - See additional terms and conditions.

IS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? Yes

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT?

\$

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*? X YES NOIDENTIFY THE AIR CONTAMINANTS: 2, 6 Dimethylheptanone,

NEW SOURCE REVIEW FORM B

PTI Number: 01-08317 Facility ID: 0125042110

FACILITY NAME AY Manufacturing

FACILITY DESCRIPTION Modification application for K003 topcoat. CITY/TWP Columbus

Ohio EPA Permit to Install Information Form Please describe below any documentation which is being submitted with this recommendation (must be sent the same day). Electronic items should be submitted with the e-mail transmitting the PTI terms, and in software that CO can utilize. If mailing any hard copy, this section must be printed as a cover page. All items must be clearly labeled indicating the PTI name and number. Submit **hard copy items to Pam McGraner, AQM&P, DAPC, Central Office, and electronic files to airpti@epa.state.oh.us**

Please fill out the following. If the checkbox does not work, replace it with an 'X'

	<u>Electronic</u>	<u>Additional information File Name Convention (your PTI # plus this letter)</u>	<u>Hard Copy</u>	<u>None</u>
<u>Calculations (required)</u>	<input checked="" type="checkbox"/>	0000000c.wpd	<input type="checkbox"/>	
<u>Modeling form/results</u>	<input type="checkbox"/>	0000000s.wpd	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>PTI Application (complete or partial)*</u>	<input type="checkbox"/>	0000000a.wpd	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>BAT Study</u>	<input type="checkbox"/>	0000000b.wpd	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>Other/misc.</u>	<input type="checkbox"/>	0000000t.wpd	<input type="checkbox"/>	<input checked="" type="checkbox"/>

* Mandatory for netting, PSD, nonattainment NSR, 112(g), 21-07(G)(9)(g) and 21-09(U)(2)(f) - 2 complete copies.

Please complete (see comment bubble to the left for additional instructions):

NSR Discussion

AY Manufacturing is applying for a Chapter 31 modification for this emissions unit because they are planning to initiate the use of a new topcoat with a higher VOC content than their original permit allowed. This new PTI will replace PTI 01-4050, issued November 4, 1992 and PTI 01-5225, issued November 16, 1994 for this emissions unit. The emissions unit includes a topcoat spray booth and oven for a coating line that paints motorcycle engines. The oven is also used by K010, a powder coating operation, and is considered to be de minimis. Terms and conditions for the permit were selected using hypertext templates. The annual and hourly emissions limits were calculated based on the maximum VOC content of the coatings/cleanup provided by the PTI application. Modeling was performed to ensure compliance with the Air Toxic Policy and the maximum ground level concentration was well below the MAGLC for the worst-case pollutant. A hard copy of the modeling will be sent.

Applicable regulations:

OAC rule 3745-31-05(A)(3)

The EU is exempt from OAC rule 3745-21-09(U) pursuant to OAC rule 3745-21-09(U)(2)(e)(ii).

Calculations:

Hourly VOC limit (based on maximums listed in PTI application and MSDS sheets):

(max. VOC content of coating) x (max. hourly usage) + (max. VOC content of cleanup) x (max. hourly usage)

$[(4.53 \text{ lb VOC/gal}) \times (1.2 \text{ gal/hour})] + [(8.12 \text{ lb VOC/gal}) \times (0.5 \text{ gal/hr})] = 9.5 \text{ lbs VOC/hr}$

Annual VOC limit:

(max. VOC content of coating) x (max. annual coating usage) + (max. VOC content of cleanup) x (max. annual coating

NEW SOURCE REVIEW FORM B

PTI Number: 01-08317 Facility ID: 0125042110

FACILITY NAME AY Manufacturing

FACILITY DESCRIPTION Modification application for K003 topcoat. CITY/TWP Columbus

usage)

$$[(4.53 \text{ lb VOC/gal}) \times (1680 \text{ gal/year})] + [(8.12 \text{ lb VOC/gal}) \times (120 \text{ gal/yr})] \times (1 \text{ ton}/2000 \text{ lbs}) = 4.3 \text{ tons VOC/year}$$

If you have any questions, please call me at x 8-5043. Thank you.

Kelly Meinzer

Please complete for these type permits (For PSD/NSR Permit, place mouse over this text):

Synthetic Minor Determination and/or Netting Determination
Permit To Install ENTER PTI NUMBER HERE

- A. Source Description
- B. Facility Emissions and Attainment Status
- C. Source Emissions
- D. Conclusion

PLEASE PROVIDE ADDITIONAL NOTES OR COMMENTS AS NECESSARY:

NONE

Please complete:

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

<u>Pollutant</u>	<u>Tons Per Year</u>
VOC	4.3 tpy