Mr. William Schleizer
BMI Refractory Services, Inc.
201 Mississippi Street
Gary, Indiana 46402

Re: Registered Construction and Operation Status,
089-14291-00466

Dear Mr. Schleizer:

The application from BMI Refractory Services, Inc., received on April 25, 2001, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.5, it has been determined that the following refractory plant, to be located at 201 Mississippi Street, Gary, Indiana, is classified as registered:

One (1) refractory manufacturing plant, with a maximum capacity of 88.5 tilting spouts per year, consisting of the following operations:

(a) One (1) natural gas-fired enclosed dryer, identified as D-001, with a maximum heat input capacity of 1.0 MMBtu per hour. Emissions of particulate matter are controlled using a baghouse (identified as DC-001) which exhausts at stack S-001.

(b) Refractory and shell preparation operations consisting of the following operations and producing fugitive particulate emissions less than 5 tons per year:

(1) Removal of spent refractory castable from steel shell.

(2) Wet mixing of new refractory using one (1) Praschak mixer.

(3) Vibra-casting of wet refractory at a maximum production rate 3,000 pounds of refractory per hour.

(4) Installation of impact pads.

The following conditions shall be applicable:

1. Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of twenty percent (20%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity) monitor in a six (6) hour period.

2. Pursuant to 326 IAC 6-3-2(c) (Process Weight Rule), the PM from the dryer shall not exceed 1.0 pound per hour when operating at a process weight rate of 242.5 pounds per hour.

   The pounds per hour limitation was calculated with the following equation:

   Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

   $E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour; and P = process weight rate in tons per hour

   The baghouse for PM control shall be in operation at all times when the dryer is in operation.

3. Pursuant to 326 IAC 6-1-11.2 (Lake County Particulate Matter Contingency Measures), upon notification from IDEM, OAQ that the source has caused or contributed to an exceedance of the twenty-four (24) hour ambient air quality standard for PM10, the Permittee shall implement any reduction measures required by 326 IAC 6-1-11.2 within one hundred eighty (180) days of the initial notification.

This registration is the first air approval issued to this source. The source may operate according to 326 IAC 2-5.5.

An authorized individual shall provide an annual notice to the Office of Air Quality that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.5-4(a)(3). The annual notice shall be submitted to:

Compliance Data Section
Office of Air Quality
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015

no later than March 1 of each year, with the annual notice being submitted in the format attached.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

ERG/AB

cc: File - Lake County
Air Compliance - Ramesh Tejuja
Northwest Regional Office
Permit Tracking - Janet Mobley
Technical Support and Modeling - Michele Boner
Compliance Data Section - Karen Nowak

Registration

This form should be used to comply with the notification requirements under 326 IAC 2-5.5-4(a)(3)

Company Name:	**BMI Refractory Services, Inc.**
Address:	**201 Mississippi Street**
City:	**Gary, Indiana 46402**
Authorized individual:	**William Schleizer**
Phone #:	**219 - 885-2209**
Registration #:	**089-14291-00466**

I hereby certify that BMI Refractory Services, Inc. is still in operation and is in compliance with the requirements of Registration 089-14291-00466.

Name (typed):
Title:
Signature:
Date:

Indiana Department of Environmental Management
Office of Air Quality
and
Gary Air and Land Pollution Control

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name:	BMI Refractory Services, Inc.
Source Location:	201 Mississippi Street, Gary, Indiana 46402
County:	Lake
SIC Code:	3255/3297
Operation Permit No.:	R089-14291-00466
Permit Reviewer:	ERG/AB

The Office of Air Quality (OAQ) has reviewed an application from BMI Refractory Services, Inc. relating to the construction and operation of a refractory plant.

New Emission Units and Pollution Control Equipment

The source consists of the following emission units and pollution control devices:

One (1) refractory manufacturing plant, with a maximum capacity of 88.5 tilting spouts per year, consisting of the following operations:

(a) One (1) natural gas-fired enclosed dryer, identified as D-001, with a maximum heat input capacity of 1.0 MMBtu per hour. Emissions of particulate matter are controlled using a baghouse (identified as DC-001) which exhausts at stack S-001.

(b) Refractory and shell preparation operations consisting of the following operations and producing fugitive particulate emissions less than 5 tons per year:

(1) Removal of spent refractory castable from steel shell.

(2) Wet mixing of new refractory using one (1) Praschak mixer.

(3) Vibra-casting of wet refractory at a maximum production rate 3,000 pounds of refractory per hour.

(4) Installation of impact pads.

Note: The natural gas-fired dryer can be moved within the plant, but will not be moved to alternative sources and/or location.

Unpermitted Emission Units and Pollution Control Equipment

There are no unpermitted facilities operating at this source during this review process.

Existing Approvals

This source has no previous construction or operating permits.

Enforcement Issue

There are no enforcement actions pending.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{0}F)
S-001	Dryer	40	1.67	4,500	100

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on April 25, 2001, with additional information received on June 11, 2001.

Emission Calculations

The calculations submitted by the applicant have been verified and found to be accurate and correct. These calculations are provided in Appendix A of this document (Page 1 through 4).

Potential To Emit of Source Before Controls

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA, the department, or the appropriate local air pollution control agency."

Pollutant	Potential To Emit (tons/year)
PM	12.5
PM-10	12.5
SO_2	0.0026
VOC	0.024
CO	0.37
NO_x	0.44

HAP's	Potential To Emit (tons/year)
Polycyclic Organic Matter	4.7

TOTAL	4.7

(a) The potential to emit (as defined in 326 IAC 2-7-1(29)) of PM, PM_{10}, SO_2, CO and NO_x is less than 100 tons per year and the potential to emit of VOC is less than 25 tons per year. Therefore, the source is not subject to the provisions of 326 IAC 2-7.

(b) The potential to emit (as defined in 326 IAC 2-7-1(29)) of all criteria pollutants is less than 25 tons per year. Therefore, the source is not subject to the provisions of 326 IAC 2-6.1.

(c) The potential to emit (as defined in 326 IAC 2-7-1(29)) PM and PM_{10} are greater than the levels listed in 326 IAC 2-1.1-3(d)(1), therefore the source is subject to the provisions of 326 IAC 2-5.5.1.

(d) The potential to emit (as defined in 326 IAC 2-7-1(29)) of any single HAP is less than ten (10) tons per year and the potential to emit (as defined in 326 IAC 2-7-1(29)) of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, the source is not subject to the provisions of 326 IAC 2-7.

(e) Fugitive Emissions
Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

County Attainment Status

The source is located in Lake County.

Pollutant	Status
PM-10	Moderate Nonattainment
SO_2	Primary Nonattainment
NO_2	Attainment
Ozone	Severe Nonattainment
CO	Attainment
Lead	Attainment

(a) Volatile organic compounds (VOC) and oxides of nitrogen are precursors for the formation of ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to the ozone standards. Lake County has been designated as nonattainment for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.

(b) Lake County has been classified as nonattainment for PM_{10} and SO_2. Therefore, these emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.

(c) This source is located in the nonattainment area of Lake County.

(d) Fugitive Emissions
Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2, 40 CFR 52.21, or 326 IAC 2-3 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

Source Status

New Source PSD Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	0.125
PM10	0.125
SO_2	0.0026
VOC	0.024
CO	0.37
NO_x	0.44
Single HAP	0.05
Combination HAPs	0.05

(a) This new source is **not** a major stationary source because no attainment pollutant is emitted at a rate of 250 tons per year or greater, no nonattainment pollutant is emitted at a rate of 100 tons per year or greater and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2 and 2-3, and 40 CFR 52.21, the PSD and Emission Offset requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This new source is not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

(a) each criteria pollutant is less than 100 tons per year,
(b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
(c) any combination of HAPs is less than 25 tons/year.

This is the first air approval issued to this source.

Federal Rule Applicability

(a) There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this source.

(b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this source.

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

This source is located in Lake County and the potential to emit NO_x and VOC is less than ten (10) and the potential to emit CO, PM_{10} and SO_2 is less than one hundred (100) tons per year. Therefore, 326 IAC 2-6 does not apply.

326 IAC 5-1 (Visible Emissions Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of twenty percent (20%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

State Rule Applicability - Individual Facilities

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))

The operation of the dryer will emit less than 10 tons per year of a single HAP or 25 tons per year of a combination of HAPs. Therefore, 326 IAC 2-4.1 does not apply.

326 IAC 8-1-6 (New Facilities - General Reduction Requirement)

This source does not have potential VOC emissions equal to or greater than twenty five (25) tons per year, therefore this source is not subject to the provisions of 326 IAC 8-1-6.

326 IAC 6-1-2 (Nonattainment Area Limitations)

326 IAC 6-1-2 is not applicable to this source because the source's potential to emit PM is less than 100 tons per year and the source's actual emissions are less than 10 tons per year.

326 IAC 6-3-2 (Process Operations)

The particulate matter (PM) from the dryer shall be limited to 1.0 pounds per hour when operating at a process weight rate of 242.5 pounds per hour.

This limit was calculated using the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

The baghouse shall be in operation at all times the dryer is in operation, in order to comply with this limit. Compliance monitoring requirements are not necessary for this baghouse because the allowable emissions are less than 10 pounds per hour.

326 IAC 6-1-10 (Lake County PM_{10} Emission Requirements)

This source is not subject to 326 IAC 6-1-10 (Lake County PM_{10} Emission Requirements) because it is not a source that is specifically listed in this rule.

326 IAC 6-1-11.1 (Lake County Fugitive Particulate Matter Control Requirements)

326 IAC 6-1-11.1 is not applicable to this source because the total uncontrolled fugitive PM_{10} is less than 5 tons per year.

326 IAC 6-1-11.2 (Lake County Particulate Matter Contingency Measures)

This source is subject to 326 IAC 6-1--11.2 (Lake County Particulate Matter Contingency Measures) because it has potential emissions of PM_{10} greater than ten (10) tons per year.

326 IAC 8-7 (Specific VOC Reduction Requirements for Lake, Porter, Clark, and Floyd Counties)

This source is not subject to 326 IAC 8-7 because the potential to emit VOCs is less than ten (10) tons per year.

Conclusion

The construction and operation of this refractory plant shall be subject to the conditions of the attached proposed Registration 089-14291-00466.

Appendix A: Emissions Calculations
Natural Gas-Fired Dryer
MM BTU/HR <100

Company Name: **BMI Refractory Services, Inc.**
Address City IN Zip: **201 Mississippi Street, Gary, IN 46402**
CP: **089-14291**
Plt ID: **00466**
Reviewer: ERG/AB
Date: 06/12/01

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
1.0	8.8

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	7.6	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.0333	0.0333	0.0026	0.4380	0.0241	0.3679

*PM and PM-10 emission factor is filterable and condensable PM combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).
See page 2 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas-Fired Dryer
MM BTU/HR <100

HAPs Emissions

Company Name: **BMI Refractory Services, Inc.**
Address City IN Zip: **201 Mississippi Street, Gary, IN 46402**
CP: **089-14291**
Plt ID: **00466**
Reviewer: ERG/AB
Date: 06/12/01

HAPs - Organics

	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03
Potential Emission in tons/yr	9.198E-06	5.256E-06	3.285E-04	7.884E-03	1.489E-05

HAPs - Metals

	Lead	Cadmium	Chromium	Manganese	Nickel
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03
Potential Emission in tons/yr	2.190E-06	4.818E-06	6.132E-06	1.664E-06	9.198E-06

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix A: Emissions Calculations
PM Emissions from Refractory Dryout Process

Company Name: **BMI Refractory Services, Inc.**
Address City IN Zip: **201 Mississippi Street, Gary, IN 46402**
CP: **089-14291**
Plt ID: **00466**
Reviewer: ERG/AB
Date: 06/13/01

Material	Amount of PM Released During Dryout ** (Pounds/spout)	Maximum No. of Spouts per year	Maximum PM Emissions (Pounds/Year)	Maximum PM Emissions (Tons/Year)	Control Efficiency of Baghouse (%)	Maximum PM Emissions After Controls (Tons/year)
Coal tar pitch	281.00	88.5	24,868.50	12.43	99	0.1243

** Based on data provided by GGB from Premeir R & D laboratory tests and published coking data for similar coal-tar pitch.
This data was used because emission factors for this process are not available in AP-42 and FIRE.
The characterization of smoke emissions as particulate matter confirmed by technical consultation with control device manufacturer (Nederman) and IDEM engineering staff.

Appendix A: Emissions Calculations
HAP Emissions from Refractory Dryout Process

Company Name: **BMI Refractory Services, Inc.**
Address City IN Zip: **201 Mississippi Street, Gary, IN 46402**
CP: **089-14291**
Plt ID: **00466**
Reviewer: ERG/AB
Date: 06/13/01

HAP	Amount of PM Released During Dryout ** (Pounds/spout)	Maximum No. of Spouts per year	Maximum PM Emissions (Pounds/Year)	Maximum PM Emissions (Tons/Year)	Control Efficiency of Baghouse (%)	Maximum PM Emissions After Controls (Tons/year)
Polycyclic Organic Matter (POM)	105.60	88.5	9,345.60	4.67	99	0.047

** Based on MSDS data for refractory castable product Hydra Max TC6.