

**CONSTRUCTION PERMIT  
OFFICE OF AIR MANAGEMENT**

**Rock-Tenn Company  
983 S. Marr Road  
Columbus, IN 47201**

is hereby authorized to construct

- (a) Boiler #1 is fired by natural gas and has fuel oil No.4 as back-up. It has maximum heat input rate of 2.092 MMBTU/hr and was installed September 16, 1988.
- (b) Boiler #2 is fired by natural gas and has fuel oil No.4 as back-up. has maximum heat input rate of 6.277 MMBTU/hr and was installed May 31, 1974.
- (c) Boiler #3 is fired by natural gas and has fuel oil No.4 as back-up. has maximum heat input rate of 6.277 MMBTU/hr and was installed May 31, 1974.

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP-005-8627-00061	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

## Construction Conditions

### General Construction Conditions

1. That the data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may affect allowable emissions, the change must be approved by the Office of Air Management (OAM).
2. That this permit to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

### Effective Date of the Permit

3. That pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.
4. That pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.
5. That notwithstanding Construction Condition No. 6, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

### First Time Operation Permit

6. That this document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:
  - (a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.
  - (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.
  - (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.
  - (d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-1-7.1(Fees).
  - (e) Pursuant to 326 IAC 2-1-4, the Permittee shall apply for an operation permit renewal at

least ninety (90) days prior to the expiration date established in the validation letter. The operation permit issued shall contain as a minimum the conditions in the Operation Conditions section of this permit.

7. That when the facility is constructed and placed into operation the following operation conditions shall be met:

### **Operation Conditions**

#### General Operation Conditions

1. That the data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).
2. That the permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

#### Preventive Maintenance Plan

3. That pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a preventive maintenance plan, including the following information:
  - (a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.
  - (b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.
  - (c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

The preventive maintenance plan shall be submitted to IDEM, OAM upon request and shall be subject to review and approval.

#### Transfer of Permit

4. That pursuant to 326 IAC 2-1-6 (Transfer of Permits):
  - (a) In the event that ownership of these Boilers #1, #2, #3 is changed, the Permittee shall notify OAM, Permit Branch, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.
  - (b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.
  - (c) The OAM shall reserve the right to issue a new permit.

Permit Revocation

5. That pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:
- (a) Violation of any conditions of this permit.
  - (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
  - (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.
  - (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
  - (e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

Availability of Permit

6. That pursuant to 326 IAC 2-1-3(l), the Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM, or other public official having jurisdiction.

Malfunction Condition

7. That pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):
- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.
  - (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.
  - (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
  - (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

Opacity Limitations

8. That pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:
- (a) visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.
  - (b) visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.

Particulate Matter Limitation

9. That pursuant to 326 IAC 6-2-4, the particulate matter (PM) emissions from the 2.092 million BTU/hour boiler shall be limited to 0.542 pounds/MMBTU heat input.

Particulate Matter Limitation

10. That pursuant to 326 IAC 6-2-3, the particulate matter (PM) emissions from the 6.277 million BTU/hour boilers shall be limited to 0.6 pounds/MMBTU heat input.

Sulfur Dioxide Emission Limitations

11. That pursuant to 326 IAC 7-1.1 (Sulfur Dioxide Emission Limitations), sulfur dioxide (SO<sub>2</sub>) emissions from both the 6.277 million BTU/hour boilers shall be limited to 1.6 pounds per million BTU heat input when firing No. 4 fuel oil. This corresponds to a sulfur content of 1.45%wt. in the fuel oil.

Fuel Oil Analysis

12. Compliance shall be determined utilizing one of the following options.
- (a) Pursuant to 326 IAC 3-3-4, the Permittee shall demonstrate that the fuel oil sulfur content does not exceed one and four tenths percent (1.4%) by weight by:
    - (1) Providing vendor analysis of fuel delivered, if accompanied by a certification;
    - (2) Analyzing the oil sample to determine the sulfur content of the oil via the procedures in 40 CFR 60, Appendix A, Method 19.
      - (A) Oil samples may be collected from the fuel tank immediately after the fuel tank is filled and before any oil is combusted; and
      - (B) If a partially empty fuel tank is refilled, a new sample and analysis would be required upon filling; or
  - (b) Compliance may also be determined by conducting a stack test for sulfur dioxide emissions from the 6.277 MMBTU boilers, using 40 CFR 60, Appendix A, Method 6 in accordance with the procedures in 326 IAC 3-2.1.

A determination of noncompliance pursuant to either of the methods specified in (a) or (b) above shall not be refuted by evidence of compliance pursuant to the other method.

**MALFUNCTION REPORT**

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR MANAGEMENT  
FAX NUMBER - 317 233-5967**

**This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6  
and to qualify for the exemption under 326 IAC 1-6-4.**

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE: IT HAS POTENTIAL TO EMIT 25 LBS/HR PARTICULATES ? \_\_\_\_\_, 100 LBS/HR VOC ? \_\_\_\_\_, 100 LBS/HR SULFUR DIOXIDE ? \_\_\_\_\_ OR 2000 LBS/HR OF ANY OTHER POLLUTANT ? \_\_\_\_\_ EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION \_\_\_\_\_.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC \_\_\_\_\_ OR, PERMIT CONDITION # \_\_\_\_\_ AND/OR PERMIT LIMIT OF \_\_\_\_\_

THIS INCIDENT MEETS THE DEFINITION OF 'MALFUNCTION' AS LISTED ON REVERSE SIDE ?    Y        N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ?    Y        N

COMPANY: Rock-Tenn Company PHONE NO. ( 812 ) 378-0308

LOCATION: (CITY AND COUNTY) Columbus, IN Bartholomew

PERMIT NO. 005-8627-00061 AFS PLANT ID: 005-00061 AFS POINT ID: \_\_\_\_\_ INSP: \_\_\_\_\_

CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON: \_\_\_\_\_

DATE/TIME MALFUNCTION STARTED: \_\_\_\_/\_\_\_\_/19\_\_\_\_ AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION:

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE \_\_\_\_/\_\_\_\_/19\_\_\_\_ AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO2, VOC, OTHER: \_\_\_\_\_

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: \_\_\_\_\_

MEASURES TAKEN TO MINIMIZE EMISSIONS: \_\_\_\_\_

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL\* SERVICES: \_\_\_\_\_

CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS: \_\_\_\_\_

CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT: \_\_\_\_\_

INTERIM CONTROL MEASURES: (IF APPLICABLE) \_\_\_\_\_

MALFUNCTION REPORTED BY: \_\_\_\_\_

TITLE: \_\_\_\_\_  
(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

**Please note - This form should only be used to report malfunctions  
applicable to Rule 326 IAC 1-6 and to qualify for  
the exemption under 326 IAC 1-6-4.**

**326 IAC 1-6-1            Applicability of rule**

Sec. 1. The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour of particulates, one hundred (100) pounds per hour of volatile organic compounds or SO<sub>2</sub>, or two thousand (2,000) pounds per hour of any other pollutant; or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

**326 IAC 1-2-39            “Malfunction” definition**

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m. : 11 IR 2373)

\***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

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## Indiana Department of Environmental Management Office of Air Management

### Technical Support Document (TSD) for New Construction and Operation

#### Source Background and Description

Source Name: Rock-Tenn Company  
 Source Location: 983 S. Marr Road, Columbus, IN 47201  
 County: Bartholomew  
 Construction Permit No.: CP-005-8627-00061  
 SIC Code: 2672  
 Permit Reviewer: Jason Gregory

The Office of Air Management (OAM) has reviewed an application from Rock-Tenn Company relating to the construction and operation of three (3) boilers, consisting of the following equipment:

- (a) Boiler #1 is fired by natural gas and has fuel oil No.4 as back-up. It has maximum heat input rate of 2.092 MMBTU/hr and was installed in September 16, 1988.
- (b) Boiler #2 is fired by natural gas and has fuel oil No.4 as back-up. has maximum heat input rate of 6.277 MMBTU/hr and was installed in May 31, 1974.
- (c) Boiler #3 is fired by natural gas and has fuel oil No.4 as back-up. has maximum heat input rate of 6.277 MMBTU/hr and was installed in May 31, 1974.

#### Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
Boiler 1	Boiler 1	54	0.66	unknown	300
Boiler 2	Boiler 2	54	0.66	unknown	300
Boiler 3	Boiler 3	54	0.66	unknown	300

#### Enforcement Issue

IDEM is aware that these three boilers have been constructed and operated prior to receipt of the proper permit. IDEM is reviewing this matter and will take appropriate action. This proposed permit is intended to satisfy the requirements of the construction permit rules.

#### Recommendation

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

Information, unless otherwise stated, 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 May 9, 1997, with additional information received on May 29, 1997.

### Emissions Calculations

See Appendix A (Emissions Calculation Spreadsheets) for detailed calculations (6 pages).

### Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definition (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity):

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)	37.97	3.22
Particulate Matter (PM10)	/	/
Sulfur Dioxide (SO <sub>2</sub> )	69	69
Volatile Organic Compounds (VOC)	0.156	0.156
Carbon Monoxide (CO)	2.3	2.3
Nitrogen Oxides (NO <sub>x</sub> )	9.2	9.2
Single Hazardous Air Pollutant (HAP)	0	0
Combination of HAPs	0	0

- (a) Allowable emissions are determined from the applicability of rule 326 IAC 6-2. See State Rule Applicability section for detailed calculations.
- (b) The potential emissions before control are less than or are the same as the allowable emissions, therefore, the potential emissions before control are used for the permitting determination.
- (c) Allowable emissions (as defined in the Indiana Rule) of (SO<sub>x</sub>) are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.
- (d) The boilers #2 and #3 would have been issued a construction permit at the time of construction, but since Rock-Tenn Company did not seek a construction permit at that time, they are combined into this construction permit with boiler #1.

### County Attainment Status

- (a) Volatile organic compounds (VOC) and oxides of nitrogen are precursors for the formation of ozone. Therefore, VOC and NO<sub>x</sub> emissions are considered when evaluating the rule applicability relating to the ozone standards. Bartholomew County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO<sub>x</sub> emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (b) Bartholomew County has been classified as attainment or unclassifiable for (pollutant(s)). Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

### Source Status

Existing source (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	0.001
PM10	0.001
SO <sub>2</sub>	0
VOC	1.12
CO	0
NO <sub>x</sub>	0

- (a) This existing source is **not** a major stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not in one of the 28 listed source categories.

### Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source, including the emissions from this permit **CP-005-8627-00061**, is still 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 status is based on all the air approvals issued to the source.

### Federal Rule Applicability

- (a) There are no New Source Performance Standards (326 IAC 12) 40 CFR Part 60 applicable to this facility.
- (b) The 40 CFR Part 60 Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units) only applies to those units that are rated between 10 and 100 MMBTU. Since these boilers are less than 10 MMBTU, this rule does not apply.

### State Rule Applicability

#### 326 IAC 5-1-2 (Visible Emission Limitations)

Except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:

- (a) visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.
- (b) visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.

#### 326 IAC 6-2 (Particulate Emissions Limitations for Sources of Indirect Heating)

- (a) The 2.092 rating MMBTU/hr natural gas with No. 4 fuel oil back-up fired boiler identified as boiler #1 constructed in September 1988, is subject to 326 IAC 6-2 (Particulate Emissions Limitations for Sources of Indirect Heating). Pursuant to 326 IAC 6-2-4, the particulate matter (PM) emissions shall be limited to 0.542 pounds per million BTU heat input.

$$Pt = 1.09/Q^{0.26}$$

Where: Pt = lbs PM/MMBTU

Q = Total source maximum operating capacity in million Btu per hour = 2.092+6.277+6.277 = 14.646 MMBTU.

$$Pt = 1.09/14.646^{0.26} = 0.542 \text{ lbs/MMBTU}$$

Allowable PM emissions = (0.542 lb/MMBTU)\*(2.092 MMBTU/hr)\*(8760 hr/yr)\*(1 ton/2000 lbs) = 4.97 tons/year

Based on these calculations, the uncontrolled potential emissions are less than the allowable emissions, therefore, this boiler complies with the rule.

- (b) Each of the 6.277 rating MMBTU/hr natural gas with No. 4 fuel oil back-up fired boilers identified as boilers #2 and #3 constructed in May 1974, are subject to 326 IAC 6-2 (Particulate Emissions Limitations for Sources of Indirect Heating). Pursuant to 326 IAC 6-2-3, the particulate matter (PM) emissions shall be limited to 0.6 pounds per

million BTU heat input.

$$Pt = (C * a * h) / (76.5 * Q^{0.75} * N^{0.25})$$

Where: Pt = lbs PM/MMBTU

C = maximum ground level concentration which shall equal 50  $\mu\text{g}/\text{m}^3$ , pursuant to 326 IAC 6-2-3 (a).

a = plume rise factor which shall equal 0.67, pursuant to 326 IAC 6-2-3 (a).

h = Stack height in feet = 54 ft

Q = Total source maximum operating capacity in million Btu per hour = 6.277+6.277 = 12.554 MMBTU.

N = number of stacks in fuel burning operation = 2

$$Pt = (50 * 0.67 * 54) / (76.5 * 12.554^{0.75} * 2^{0.25}) = 2.98 \text{ lbs PM/MMBTU}$$

However, pursuant to 326 IAC 6-2-3 (e), particulate emissions from any facility used for indirect heating purposes which has 250 MMBTU/hr heat input or less and began operation after June 8, 1972, shall in no case exceed 0.6 lb/MMBTU heat input.

Allowable PM emissions = (0.6 lb/MMBTU)\*(6.277 MMBTU/hr)\*(8760 hr/yr)\*(1 ton/2000 lbs) = 16.5 tons/year

Based on these calculations, the uncontrolled potential emissions are less than the allowable emissions, therefore, these boilers comply with the rule.

- (c) Natural gas certification form is not needed because each of the boilers are less than 10 MMBTU.

#### 326 IAC 7-1.1 (Sulfur Dioxide Emission Limitations)

The sulfur dioxide ( $\text{SO}_2$ ) emissions from both 6.277 million BTU/hour boilers shall be limited to 1.6 pounds per million BTU heat input. This rule applies when firing No. 4 fuel oil.

The allowable sulfur content of the fuel is determined as follows:

$$1.6 \text{ lbs } \text{SO}_2 / 1000000 \text{ BTU} * 139500 \text{ BTU/gal} * 1000 \text{ gal/kgal} = 223.2 \text{ lbs } \text{SO}_2/\text{kgal}$$

$$223.2 \text{ lbs } \text{SO}_2/\text{kgal} = 157 * \text{S}$$

$$S = 1.45\%$$

Emission factor ( $157 * S$ ) obtained from AP 42 Table 1.3-2.

Since the boilers use No. 4 fuel oil with 1%wt. sulfur, they are in compliance.

### **Air Toxic Emissions**

Indiana presently requests applicants to provide information on emissions of the 187 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

- (a) None of these listed air toxics will be emitted from this final construction permit.

### **Conclusion**

The construction of boilers #1, #2, #3 will be subject to the conditions of the attached final **Construction Permit No. CP-005-8627-00061.**

**Appendix A: Emissions Calculations  
Commercial/Institutional/Residential Combustors  
Boilers with #4 Fuel Oil**

**Company Name:** Rock-Tenn Company  
**Address City IN Zip:** 983 S. Marr Road, Columbus, Indiana 47201  
**CP:** 005-8627  
**Pit ID:** 005-00061  
**Reviewer:** Jason Gregory  
**Date:** 07/23/97

Boiler #3  
 Heat Input Capacity  
 MMBtu/hr

Potential Throughput  
 kgals/year

S = Weight % Sulfur

394.168602

1

6.28

	Pollutant				
	PM	SO2	NOx	VOC	CO
Emission Factor in lb/kgal	7 <i>*see below</i>	150 <i>(157S)</i>	20.0	0.34	5.0
Potential Emission in tons/yr	1.380	29.563	3.942	0.067	0.985

**\*Particulate Matter emission factor for #4 fuel oil is 7.0 lb/kgal**

**Methodology**

1 gallon of #4 Fuel oil has a heating value of 139,500 Btu

Potential Throughput (kgals/year) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1kgal per 1000 gallon x 1 gal per 0.1395 MMBtu

Emission Factors are from AP 42 Tables 1.3-2 and 1.3-4 (SCC 1-03-005-04)

Emission (tons/yr) = Throughput (kgals/year) x Emission Factor (lb/kgal)/2,000 lb/ton

**Natural Gas Combustion Only  
MM Btu/hr 0.3 - < 10  
Commercial Boiler**

**Company Name: Rock-Tenn Company  
Address City IN Zip: 983 S. Marr Road, Columbus, Indiana 47201  
CP: 005-8627  
Plt ID: 005-00061  
Reviewer: Jason Gregory  
Date: 07/23/97**

Boiler #3	Potential Throughput
Heat Input Capacity	MMCF/yr
MMBtu/hr	
<div style="border: 1px solid black; padding: 2px; display: inline-block;">6.3</div>	55.0

Emission Factor in lb/MMCF	Pollutant					
	PM	PM10	SO2	NOx	VOC	CO
Potential Emission in tons/yr	12.0	12.0	0.6	100.0	5.8	21.0
	0.3	0.3	0.0	2.7	0.2	0.6

**Methodology**

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Emission Factors for NOx: uncontrolled = 100, Low Nox Burner = 17, Flue gas recirculation = 36

Emission Factors for CO: uncontrolled = 21, Low NOx Burner = 27, Flue gas recirculation = ND

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-03-006-03

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton