



Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

TO: Interested Parties / Applicant
DATE: September 16, 2005
RE: Raben Tire Company / 051-21538-00047
FROM: Paul Dubenetzky
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval - Registration

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 4-21.5-3-4(d) this order is effective when it is served. When served by U.S. mail, the order is effective three (3) calendar days from the mailing of this notice pursuant to IC 4-21.5-3-2(e).

If you wish to challenge this decision, IC 4-21.5-3-7 requires that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for considerations at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures
FN-REGIS.dot 1/10/05



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live.

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Mr. Tom Raben
Raben Tire Company, Inc.
2100 North New York Avenue
Evansville, Indiana 47711

September 16, 2005

Re: Registered Construction and Operation Status,
051-21538-00047

Dear Mr. Raben:

The application from Raben Tire Company, Inc. received on July 27, 2005, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.1, it has been determined that the following truck tire retreading operation, located at 12580 South Northgate Drive, Haubstadt, Indiana 47639 is classified as registered:

- (a) Two (2) tire grinding and repair stations, identified as BUF, with a maximum capacity of 25 tires per hour, controlled by a cyclone and exhausting to stack C. This unit will be constructed in 2005.
- (b) One (1) tire dissolution application and repair operation, identified as REP, with a maximum capacity of 25 tires per hour, with emissions exhausting to stacks B and D. This unit will be constructed in 2005.
- (c) Two (2) tire extruding/building machines, identified as TB, with a maximum capacity of 25 tires per hour, with emissions exhausting to stacks B and D. This unit will be constructed in 2005.
- (d) Two (2) tire curing chambers, identified as CUR, with a maximum capacity of 25 tires per hour, uncontrolled and exhausting to stacks B and D. This unit will be constructed in 2005.
- (e) One (1) natural-gas fired water heater, identified as HEAT, with a rated capacity of 0.97 MMBtu/hr, with emissions exhausting to stack A. This unit will be constructed in 2005.

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:
 - (a) Opacity shall not exceed an average of forty percent (40%) 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 15 minutes (60 readings) in a 6-hour period 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, the allowable particulate emission rate from the tire grinding line shall to exceed 1.15 pounds per hour when operating at a process weight rate of 0.15 tons per hour.

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

Interpolation and extrapolation of the data for the process weight rate up to 60,000 pounds per hour shall be accomplished by use of the equation:

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

The cyclone shall be in operation at all times the tire grinding process is in operation, in order to comply with this limit.

3. Within one hundred and eighty (180) days after initial startup, the Permittee shall perform an initial one time stack test to verify the uncontrolled, including the integral cyclone, emission factors of 0.019 lb PM and PM10 per lb of rubber ground off, respectively, for the tire retread operation. The test method shall utilize methods as approved by the Commissioner. Testing shall be conducted in accordance with 326 IAC 3-5.

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 2-5.1-2(f)(3). The annual notice shall be submitted to:

**Compliance Data Section
Office of Air Quality
100 North Senate Avenue
Indianapolis, IN 46204**

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.

Pursuant to Contract No. A305-5-65, IDEM, OAQ has assigned the processing of this application to Eastern Research Group, Inc., (ERG). Therefore, questions should be directed to Ms. Heather Jackson, ERG, 1600 Perimeter Park Drive, Morrisville, North Carolina 27560, or call (919) 468-7802 to speak directly to Ms. Jackson. Questions may also be directed to Duane Van Laningham at IDEM, OAQ, 100 North Senate Avenue, Indianapolis, Indiana, 46204, or call (800) 451-6027, ask for Duane Van Laningham, or extension 3-6878, or dial (317) 233-6878.

Sincerely,
Original signed by
Nysa L. James, Chief
Permits Branch
Office of Air Quality

ERG/HJ

cc: File – Gibson County
Gibson County Health Department
Southwest Regional Office
Air Compliance – Derrick Ohning
Permit Tracking
Compliance Data Section

Registration Annual Notification

This form should be used to comply with the notification requirements under 326 IAC 2-5.1-2(f)(3).

Company Name:	Raben Tire Company, Inc.
Address:	12580 South Northgate Drive
City:	Haubstadt, Indiana 47639
Authorized individual:	Tom Raben
Phone #:	(812) 465-5565 (ext. 1025)
Registration #:	051-21538-00047

I hereby certify that Raben Tire Company, Inc. is still in operation and is in compliance with the requirements of Registration No. 051-21538-00047.

Name (typed):
Title:
Signature:
Date:

Indiana Department of Environmental Management Office of Air Quality

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name: Raben Tire Company, Inc.
Location: 12580 South Northgate Drive, Haubstadt, Indiana 47639
County: Gibson
SIC Code: 7534
Registration No.: 051-21538-00047
Permit Reviewer: ERG/HJ

The Office of Air Quality (OAQ) has reviewed an application from Raben Tire Company, Inc., relating to the construction and operation of a truck tire retreading operation.

Registered Emission Units and Pollution Control Equipment

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

- (a) Two (2) tire grinding and repair stations, identified as BUF, with a maximum capacity of 25 tires per hour, controlled by a cyclone and exhausting to stack C. This unit will be constructed in 2005.
- (b) One (1) tire dissolution application and repair operation, identified as REP, with a maximum capacity of 25 tires per hour, with emissions exhausting to stacks B and D. This unit will be constructed in 2005.
- (c) Two (2) tire extruding/building machines, identified as TB, with a maximum capacity of 25 tires per hour, with emissions exhausting to stacks B and D. This unit will be constructed in 2005.
- (d) Two (2) tire curing chambers, identified as CUR, with a maximum capacity of 25 tires per hour, uncontrolled and exhausting to stacks B and D. This unit will be constructed in 2005.
- (e) One (1) natural-gas fired water heater, identified as HEAT, with a rated capacity of 0.97 MMBtu/hr, with emissions exhausting to stack A. This unit will be constructed in 2005.

Unpermitted Emission Units and Pollution Control Equipment

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

Existing Approvals

There are no existing air approvals issued to this source.

Air Pollution Control Justification as an Integral Part of the Process

The company has submitted the following justification such that the cyclone be considered as an integral part of the tire grinding process:

A cyclone is necessary to pneumatically convey buffer rubber away from the buffer.

IDEM, OAQ has evaluated the justifications and agreed that the cyclone will be considered as an integral part of the tire grinding process because the high volume of air flow and velocity necessitate the cyclone which serves as a pneumatic conveyance device. Therefore, the permitting level will be determined using the potential to emit after the cyclone. Operating conditions in the proposed permit will specify that this cyclone shall operate at all times when the tire grinding process is in operation.

Enforcement Issue

There are no enforcement actions pending.

Stack Summary

Stack ID	Operation	Height (ft)	Diameter (ft)	Flow Rate (acfm)	Temperature (°F)
A	HEAT	18.5	1.2	3,000	350 – 400
B, D	REP, TB, CUR	34	1.5 x 1.5	3,000	ambient + 10°F
C	BUF	19	1	2,500	ambient

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 July 27, 2005. Additional information was received on August 24, 2005.

Emission Calculations

See Appendix A of this document for detailed emissions calculations (pages 1 through 7).

Potential to Emit of the 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	16.0
PM10	16.0
SO ₂	2.55 x 10 ⁻³
VOC	18.2
CO	0.36
NO _x	0.42
Total HAP	0.832

- (a) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of PM, PM10, SO₂, VOC, CO and NO_x are less than 25 tons per year and potential to emit of PM/PM10 is greater than five (5) tons per year and VOC is greater than ten (10) tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-5.1 and 326 IAC 2-5.5. A registration will be issued.

- (b) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of any single HAP is less than ten (10) tons per year and the potential to emit (as defined in 326 IAC 2-1.1-1(16)) 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.
- (c) Fugitive Emissions
 Since this type of operation is not in 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.

County Attainment Status

The source is located in Gibson County.

Pollutant	Status
PM10	Attainment
PM2.5	Unclassifiable or attainment
SO ₂	Attainment
NO ₂	Attainment
8-Hour Ozone	Attainment
1-Hour Ozone	Attainment
CO	Attainment
Lead	Attainment

- (a) Gibson County has been classified as unclassifiable or attainment for PM2.5. The source is not located in Montgomery Township. U.S. EPA has not yet established the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 for PM 2.5 emissions. Therefore, until the U.S.EPA adopts specific provisions for PSD review for PM2.5 emissions, it has directed states to regulate PM10 emissions as surrogate for PM2.5 emissions. See the State Rule Applicability for the source section.
- (b) Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) emissions are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to ozone. Gibson County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability for the source section.
- (c) Gibson County has been classified as attainment or unclassifiable in Indiana for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability for the source section.

Source Status

New Source PSD Definition (emissions after controls, based on 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/year)
PM	16.0
PM10	16.0
SO ₂	2.55 x 10 ⁻³
VOC	18.2
CO	0.36
NO _x	0.42
Total HAPs	0.832

- (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 and it is not in one of the 28 listed source categories. Therefore, the requirements of 326 IAC 2-2, the PSD 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 per 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) included in this permit.
- (b) The source is not subject to New Source Performance Standards BBB-Standards of Performance for the Rubber Tire Manufacturing Industry because it does not have any of the facilities affected by this rule: undertread cementing operations, sidewall cementing operations, tread end cementing operations, bead cementing operations, green tire spraying operations, Michelin-A operations, Michelin-B operations, and Michelin-C automatic operations.
- (c) There are no National Emission Standards for Hazardous Air Pollutants (NESHAP)(326 IAC 14, 20 and 40 CFR Part 61, 63) included in this permit.
- (d) The National Emission Standards for Rubber Tire Manufacturing (Subpart XXXX) do not apply to this source because this source is not a major source of hazardous air pollutants.

State Rule Applicability – Entire Source

326 IAC 2-2 (PSD)

This new source is not a major source because no attainment pollutant is emitted at a rate of 250 tons per year or greater, and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.

326 IAC 2-6 (Emission Reporting)

This source is located in Gibson County and is not required to operate under a Part 70 permit. Therefore, 326 IAC 2-6 does not apply.

326 IAC 5-1 (Opacity 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 the permit:

- (a) Opacity shall not exceed an average of forty percent (40%) 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.

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

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

State Rule Applicability – Individual Facilities

326 IAC 6-3-2 (Particulate)

Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from the tire grinding line shall not exceed 1.15 pounds per hour when operating at a process weight rate of 0.15 tons per hour.

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

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

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

The cyclone shall be in operation at all times the tire grinding process is in operation, in order to comply with this limit.

326 IAC 6-3-2 (Particulate)

The tire dissolution application and repair operation (identified as REP), the tire extruding/building operation (identified as TB), the tire curing operation (identified as CUR), and the natural-gas fired water heater (identified as HEAT), are not subject to 326 IAC 6-3-2 because the potential particulate emissions are less than 0.551 pounds per hour. Pursuant to 326 IAC 6-3-1(b)(14), units with particulate emissions less than 0.551 pounds per hour are exempt from the requirements of 326 IAC 6-3.

326 IAC 8-1-6 (Volatile Organic Compounds)

Pursuant to 326 IAC 8-1-6(a), the tire grinding operation (identified as BUF), the tire dissolution application and repair operation (identified as REP), the tire extruding/building operation (identified as TB), the tire curing operation (identified as CUR) and the natural-gas fired water heater (identified as HEAT), are not subject to the requirements of 326 IAC 8-1-6 because they each have potential VOC emissions less than 25 tons per year.

Testing Requirements

The emission rate in the stack testing requirement was calculated as follows:

$$12 \text{ lbs rubber ground off/tire} \times 25 \text{ tires /hr} = 300 \text{ lbs rubber ground off/hr}$$

5.71 lb/hr of PM/PM10 is the maximum hourly emission rate the source can have to stay below the registration threshold of 25 tons per year. Thus,

$$\frac{5.71 \text{ lb/hr of PM/PM10}}{300 \text{ lbs rubber ground off/hr}} = \text{Emission rate of } 0.019 \text{ lbs PM/PM10/lb of tire}$$

Conclusion

The construction and operation of this truck tire retreading operation shall be subject to the conditions of the Registration No.: 051-21538-00047.

**Appendix A: Emission Calculations
VOC, PM, and HAP Emissions
From the Grinding Operations of Tire Carcasses**

Company Name: Raben Tire Company, Inc.
Address: 12580 South Northgate Dr.
Haubstadt, IN. 47639
Permit #: 051-21538-00047
Reviewer: ERG/HJ
Date: August 26, 2005

Truck Tires Ground for Retreading (tires/yr): 219,000
Amount of rubber ground off per tire (lbs/tire ground): 12
Maximum Rate of Rubber Ground Off (lbs/hr): 300

Pollutants	*Emission Factor (lb/lb rubber ground off)	Potential to Emit (lb/hr)	Potential to Emit (tons/yr)
Total VOC	5.21E-04	1.56E-01	0.68
Total PM/PM10	5.45E-01	1.64E+02	1.58E+01
Total HAPs	1.27E-04	3.80E-02	1.66E-01
HAPs			
1,1,1-Trichloroethane (Methyl Chloroform)	3.58E-07	1.07E-04	4.70E-04
1,3-Butadiene	2.65E-05	7.95E-03	3.48E-02
2-Butanone	5.15E-07	1.55E-04	6.77E-04
4-Methyl-2-pentanone	1.92E-05	5.76E-03	2.52E-02
Acetophenone	7.13E-07	2.14E-04	9.37E-04
Acrolein	1.68E-06	5.04E-04	2.21E-03
Aniline	1.97E-05	5.91E-03	2.59E-02
Benzene	4.13E-06	1.24E-03	0.005
bis(2-Ethylhexyl)Phthalate	7.94E-06	2.38E-03	0.010
Cadmium (Cd) Compounds	8.58E-07	2.57E-04	1.13E-03
Carbon Disulfide	2.58E-06	7.74E-04	3.39E-03
Carbonyl Sulfide	8.70E-06	2.61E-03	1.14E-02
Chromium (Cr) Compounds	1.44E-06	4.32E-04	1.89E-03
Di-n-butylphthalate	2.24E-06	6.72E-04	2.94E-03
Dibenzofuran	1.59E-07	4.77E-05	2.09E-04
Hexane	1.60E-05	4.80E-03	2.10E-02
Isooctane	1.09E-05	3.27E-03	1.43E-02
Lead (Pb) Compounds	2.02E-06	6.06E-04	2.65E-03
m-Xylene + p-Xylene	2.23E-06	6.69E-04	2.93E-03
Methylene Chloride ¹	2.46E-07	7.38E-05	3.23E-04
Naphthalene	5.81E-07	1.74E-04	7.63E-04
Nickel (Ni) Compounds	2.03E-06	6.09E-04	2.67E-03
o-Toluidine	2.55E-06	7.65E-04	3.35E-03
Phenol	1.66E-06	4.98E-04	2.18E-03
Toluene ¹	6.27E-06	1.88E-03	8.24E-03
Trichloroethylene	1.95E-06	5.85E-04	2.56E-03

Methodology

PTE (lb/hr) = Rate of Rubber Ground Off (lb/hr) x Emission Factor (lb/lb)

PTE (tons/yr) = PTE (lb/hr) x 8760 (hr/yr) x (1 ton/2000 lb)

PM/PM10 PTE (tons/yr) = PTE (lb/hr) x 8760 (hr/yr) x (1 ton/2000 lb) x (1-control efficiency)

Notes

- * Emission Factors are adapted from AP-42, Chapter 4.12, Table 4.12-12: Grinding Operations (draft-Dec. 1997)
 - * The PM/PM10 PTE is calculated after controls because the cyclone is considered integral to the process.
 - * Chromium value represents total chromium. Grindings were analyzed for the presence of hexavalent chromium.
 - * The facility will grind used tires, known as carcasses. Thus, the carcass emission factor was used.
- Carcass emissions are reported in pounds emitted per pound of rubber removed or ground-off.

**Appendix A: Emission Calculations
VOC and HAP Emissions
From the Curing Operations in the Tire Building Process**

**Company Name: Raben Tire Company, Inc.
Address: 12580 South Northgate Dr.
Haubstadt, IN. 47639
Permit #: 051-21538-00047
Reviewer: ERG/HJ
Date: August 26, 2005**

Tires Cured:	25	tires/hr
Total Tires Cured:	219,000	tires/yr
Rubber Weight:	125.0	lbs/tire
Rubber Content:	80%	rubber content
Percentage Non Pre-Cured Rubber:	40%	non pre-cured rubber
Total:	8,760,000	lbs rubber/yr

Pollutant	CAS #	Tire A lb/lb rubber	Tire B lb/lb rubber	Tire C lb/lb rubber	Tire D lb/lb rubber	Tire E lb/lb rubber	Tire F lb/lb rubber	Tire G lb/lb rubber	Tire H lb/lb rubber	Tire I lb/lb rubber	Max Emission Factor lb/lb rubber	Curing Calculated Emissions ton/yr
Total VOC		3.37E-04	2.50E-04	1.46E-04	2.83E-04	1.65E-04	1.80E-04	2.07E-04	2.59E-04	1.86E-04	3.37E-04	1.48E+00
Total HAPs		7.95E-05	6.12E-05	2.76E-05	9.10E-05	9.53E-05	8.59E-05	7.42E-05	1.49E-04	6.00E-05	1.49E-04	6.53E-01
HAPs												
Acetophenone	98-86-2	7.50E-08	1.50E-07	8.96E-08	1.32E-07	7.05E-08	1.08E-07	1.21E-07	1.31E-07	1.22E-07	1.50E-07	6.55E-04
Acrolein	107-02-8	<	<	3.85E-07	<	<	<	<	<	<	3.85E-07	1.68E-03
Aniline	62-53-3	1.76E-06	2.56E-06	5.74E-07	5.70E-06	7.40E-07	4.36E-06	6.99E-07	3.36E-07	7.57E-06	7.57E-06	3.31E-02
Benzene	71-43-2	1.98E-07	<	2.32E-07	2.03E-07	4.26E-07	3.51E-07	5.38E-07	4.70E-07	4.91E-07	5.38E-07	2.36E-03
Benzyl Chloride	100-44-7	<	<	<	<	<	4.42E-08	<	<	<	4.42E-08	1.94E-04
Biphenyl	92-52-4	9.53E-08	6.98E-08	4.93E-08	4.03E-08	4.43E-08	<	6.97E-08	4.81E-08	<	9.53E-08	4.18E-04
bis(2-Ethylhexyl)phthalate	117-81-7	1.14E-07	1.60E-06	1.36E-07	2.39E-08	<	<	<	2.10E-08	3.98E-08	1.60E-06	7.01E-03
Carbon Disulfide	75-15-0	2.56E-05	8.98E-06	2.75E-06	7.19E-07	7.71E-06	4.92E-07	6.05E-06	6.81E-06	2.06E-06	2.56E-05	1.12E-01
Carbonyl Sulfide	463-58-1	1.09E-06	<	<	<	<	<	<	<	<	1.09E-06	4.77E-03
2-Chloroacetophenone	532-27-4	<	<	<	<	3.83E-09	<	<	<	<	3.83E-09	1.68E-05
Chloroform	67-66-3	<	<	<	<	<	<	6.50E-08	<	<	6.50E-08	2.85E-04
2-Methylphenol (o-cresol)	95-48-7	1.08E-08	1.39E-08	5.98E-09	<	<	<	7.52E-09	1.95E-08	<	1.95E-08	8.53E-05
Chloromethane (methyl chloride)	74-87-3	9.77E-08	<	7.48E-08	8.73E-08	<	4.92E-08	1.03E-07	9.16E-08	6.63E-08	1.03E-07	4.52E-04
Cumene	98-82-8	1.21E-07	2.02E-07	<	3.34E-07	4.52E-07	<	2.92E-07	6.81E-07	2.06E-07	6.81E-07	2.98E-03
Dibenzofuran	132-64-9	1.16E-08	1.26E-08	9.54E-09	6.60E-09	3.94E-09	<	6.32E-09	7.25E-09	7.31E-09	1.26E-08	5.52E-05
1,2-Dibromo-3-Chloropropane	96-12-8	<	<	<	4.11E-07	<	<	<	<	<	4.11E-07	1.80E-03
Di-n-butylphthalate	84-74-2	2.07E-07	6.42E-07	6.26E-07	1.86E-07	3.14E-07	9.49E-07	1.74E-07	3.76E-07	8.72E-08	9.49E-07	4.15E-03
1,4-Dichlorobenzene	106-46-7	4.98E-09	6.15E-09	5.63E-09	<	<	6.79E-07	5.61E-08	6.49E-10	8.61E-09	6.79E-07	2.97E-03
Ethylbenzene	100-41-4	5.28E-06	3.07E-06	9.24E-07	1.18E-05	1.28E-05	1.03E-05	6.73E-06	2.11E-05	7.12E-06	2.11E-05	9.26E-02

Pollutant	CAS #	Tire A lb/lb rubber	Tire B lb/lb rubber	Tire C lb/lb rubber	Tire D lb/lb rubber	Tire E lb/lb rubber	Tire F lb/lb rubber	Tire G lb/lb rubber	Tire H lb/lb rubber	Tire I lb/lb rubber	Max Emission Factor lb/lb rubber	Curing Calculated Emissions ton/yr
1,1-Dichloroethane (ethylidene chloride)	75-34-3	<	<	<	<	<	7.96E-08	<	<	<	7.96E-08	3.49E-04
Hexachlorobutadiene	87-68-3	<	<	<	4.11E-07	<	<	<	<	<	4.11E-07	1.80E-03
Hexane	110-54-3	4.75E-07	1.07E-06	2.46E-07	8.48E-07	3.19E-06	3.04E-06	6.73E-06	7.98E-06	3.44E-06	7.98E-06	3.50E-02
Isophorone	78-59-1	<	<	2.29E-08	9.08E-09	6.18E-08	4.37E-09	<	<	<	6.18E-08	2.71E-04
Bromomethane (methyl bromide)	74-83-9	1.14E-07	<	<	6.94E-08	<	<	<	<	<	1.14E-07	4.97E-04
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	7.92E-08	<	1.48E-07	<	4.26E-07	1.19E-07	1.32E-07	1.64E-07	1.30E-07	4.26E-07	1.86E-03
2-Butanone (methyl ethyl ketone)	78-93-3	3.96E-07	4.41E-07	4.08E-07	8.73E-07	1.04E-06	1.55E-06	6.05E-07	1.64E-06	7.61E-07	1.64E-06	7.20E-03
4-Methyl-2-Pentanone (methyl isobutyl ketone)	108-10-1	1.40E-05	1.95E-05	9.51E-06	1.23E-05	9.84E-06	9.60E-06	1.28E-05	1.62E-05	8.84E-06	1.95E-05	8.56E-02
t-Butyl Methyl Ether (methyl tert butyl ether)	1634-04-4	<	<	<	<	<	3.04E-07	<	<	<	3.04E-07	1.33E-03
Methylene Chloride	75-09-2	9.77E-07	9.30E-07	1.94E-06	7.45E-06	4.79E-06	5.62E-06	1.01E-06	2.82E-06	3.68E-06	7.45E-06	3.26E-02
Naphthalene	91-20-3	6.93E-08	7.82E-08	1.50E-07	2.83E-07	2.31E-07	<	1.26E-07	2.47E-07	1.44E-07	2.83E-07	1.24E-03
Phenol	108-95-2	7.79E-08	5.07E-07	2.21E-07	<	2.16E-07	1.30E-07	5.88E-07	5.86E-07	4.32E-07	5.88E-07	2.58E-03
Styrene	100-42-5	3.96E-07	3.09E-07	2.95E-07	2.83E-07	9.57E-07	3.98E-06	7.85E-07	3.05E-07	8.10E-07	3.98E-06	1.74E-02
1,1,2,2-Tetrachloroethane	79-34-5	<	<	<	2.06E-07	<	<	<	<	<	2.06E-07	9.00E-04
Tetrachloroethene (perchloroethylene)	127-18-4	7.66E-08	<	<	<	7.98E-08	2.13E-07	8.97E-08	1.17E-07	<	2.13E-07	9.33E-04
Toluene	108-88-3	6.60E-06	7.41E-06	2.69E-06	1.23E-05	1.30E-05	1.22E-05	1.08E-05	2.58E-05	1.06E-05	2.58E-05	1.13E-01
o-Toluidine	95-53-4	1.82E-07	2.88E-07	1.55E-08	<	1.09E-08	7.21E-09	1.30E-07	2.28E-08	<	2.88E-07	1.26E-03
1,2,4-Trichlorobenzene	120-82-1	<	7.76E-09	<	<	<	<	<	<	<	7.76E-09	3.40E-05
Trichloroethylene	79-01-6	<	<	<	<	<	<	<	<	1.10E-07	1.10E-07	4.84E-04
1,1-Dichloroethene (1,1-dichloroethylene) (vinylidene dichloride)	75-35-4	<	<	<	<	<	5.85E-07	<	<	<	5.85E-07	2.56E-03
o-Xylene	95-47-6	4.23E-06	2.24E-06	1.05E-06	7.96E-06	9.57E-06	7.73E-06	5.38E-06	1.13E-05	5.89E-06	1.13E-05	4.94E-02
m-Xylene + p-Xylene		1.72E-05	1.10E-05	5.03E-06	2.83E-05	2.93E-05	2.34E-05	2.00E-05	5.17E-05	2.16E-05	5.17E-05	2.26E-01
3/4-Methylphenol (m-cresol/p-cresol)		<	3.93E-08	<	<	<	<	3.20E-09	1.50E-08	<	3.93E-08	1.72E-04

Methodology

Rubber Curing Rate (lbs/yr) = rate of tire curing (tires/hr) x 8760 (hrs/yr) x weight of rubber per tire (lbs/tire) x rubber content of tire (%) x content of non pre-cured rubber (%)

PTE (tons/yr) = Rate of rubber curing (lb/yr) x Emission Factor (lb/lb) x (1 ton/2000 lb)

Notes

*Emission Factors are adapted from AP-42, Chapter 4.12, Tables 4.12-10: Tire Cure Emission Factor. (draft - Dec, 1997)

* Tire A, D and F are original equipment, tires E, G and H are high performance, and tires B, C and I are replacement tires.

* The factor of 40% non pre-cured rubber is used because only the new tire treads are being cured for the first time.

**Appendix A: Emission Calculations
Natural Gas Combustion
(MMBtu/hr < 100)
From the Hot Water Heater (0.97 MMBtu/hr)**

**Company Name: Raben Tire Company, Inc.
Address: 12580 South Northgate Dr.
Haubstadt, IN. 47639
Permit #: 051-21538-00047
Reviewer: ERG/HJ
Date: August 26, 2005**

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

0.97

8.5

	Pollutant					
Emission Factor in lb/MMCF	PM*	PM10*	SO2	**NO _x	VOC	CO
	7.6	7.6	0.6	100	5.5	84.0
PTE in tons/yr	0.03	0.03	2.5E-03	0.42	0.02	0.36

*PM and PM10 emission factors are condensable and filterable PM10 combined.

* Emission factor for NO_x: Uncontrolled = 100 (lb/MMCF)

* Emission Factors from AP-42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03

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

(AP-42 Supplement D 3/98)

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

**Appendix A: Emission Calculations
VOC Emissions
From the Rubber Solution Application Process**

**Company Name: Raben Tire Company, Inc.
Address: 12580 South Northgate Dr.
Haubstadt, IN. 47639
Permit #: 051-21538-00047
Reviewer: ERG/HJ
Date: August 26, 2005**

Tires Cured:

25

 tires/hr
Total Tires Cured:

219,000

 tires/yr

Pollutant	Maximum Usage Rate (grams/tire)	Weight % VOC	Weight % Heptane	PTE (tons/yr)
Total VOC	75	88.5	88.5	16.0

Notes
* There are no HAPs emitted from this process.

Methodology
Potential VOC emission rate (tons/yr) = maximum process rate (tires/yr) x maximum solution usage rate (grams/tire) x (1lb/454 grams) x weight % VOC x (1 ton/2000 lb)

**Appendix A: Emission Calculations
VOC, PM, and HAP Emissions
From the Extruding Operations in the Tire Building Process**

**Company Name: Raben Tire Company, Inc.
Address: 12580 South Northgate Dr.
Haubstadt, IN. 47639
Permit #: 051-21538-00047
Reviewer: ERG/HJ
Date: August 26, 2005**

Retread Tires: 25 tires/hr
Green Rubber Weight: 3.3 lbs/tire
Total Rubber Extruded: 724,343 lbs/yr

Analyte Name	CAS #	Cmpd #4 lb/lb rubber	Cmpd #6 lb/lb rubber	Max Emission Factor lb/lb rubber	PTE tons/yr
Total VOC		5.67E-06	1.23E-05	1.23E-05	4.45E-03
Total Particulate Matter		3.11E-08	7.77E-09	3.11E-08	1.13E-05
Total HAPs		1.03E-05	3.52E-05	3.52E-05	1.28E-02
HAPs					
1,1,1-Trichloroethane (methyl chloroform)	71-55-6	8.47E-08	9.37E-08	9.37E-08	3.39E-05
1,3-Butadiene	106-99-0	8.92E-08	5.06E-07	5.06E-07	1.83E-04
1,4-Dichlorobenzene	106-46-7	8.36E-09	<	8.36E-09	3.03E-06
2-Butanone	78-93-3	1.34E-07	1.17E-07	1.34E-07	4.86E-05
2-Chloroacetophenone	532-27-4	6.48E-09	1.68E-09	6.48E-09	2.35E-06
4-Methyl-2-Pentanone	108-10-1	5.54E-06	2.66E-06	5.54E-06	2.01E-03
Acetonitrile	75-05-8	1.09E-07	2.19E-07	2.19E-07	7.94E-05
Acetophenone	98-86-2	3.65E-08	3.32E-06	3.32E-06	1.20E-03
Acrolein	107-02-8	2.03E-07	3.10E-07	3.10E-07	1.12E-04
Aniline	62-53-3	5.08E-07	2.19E-07	5.08E-07	1.84E-04
Benzene	71-43-2	4.46E-08	2.69E-07	2.69E-07	9.74E-05
Biphenyl	92-52-4	4.65E-09	1.68E-08	1.68E-08	6.09E-06
bis(2-Ethylhexyl)phthalate	117-81-7	1.94E-07	1.13E-07	1.94E-07	7.04E-05
Carbon Disulfide	75-15-0	1.09E-07	2.66E-07	2.66E-07	9.62E-05
Chloromethane	74-87-3	7.06E-08	6.64E-08	7.06E-08	2.56E-05
Chromium (Cr) Compounds ¹		2.45E-07	2.25E-08	2.45E-07	8.87E-05
Cobalt (Co) Compounds		1.90E-08	9.92E-09	1.90E-08	6.88E-06
Cumene	98-82-8	3.66E-08	1.36E-07	1.36E-07	4.92E-05
Di-n-butylphthalate	84-74-2	1.87E-07	1.98E-07	1.98E-07	7.17E-05
Dibenzofuran	132-64-9	3.52E-09	3.24E-09	3.52E-09	1.28E-06
Dimethylphthalate	131-11-3	<	4.27E-09	4.27E-09	1.55E-06
Ethylbenzene	100-41-4	3.30E-08	8.10E-08	8.10E-08	2.93E-05
Hexane	110-54-3	1.02E-07	3.94E-07	3.94E-07	1.43E-04
Isooctane	540-84-1	3.81E-08	4.51E-08	4.51E-08	1.64E-05
Isophorone	78-59-1	3.50E-08	0.00E+00	3.50E-08	1.27E-05
m-Xylene + p-Xylene		7.01E-08	3.32E-07	3.32E-07	1.20E-04
Methylene Chloride	75-09-2	1.60E-06	1.32E-05	1.32E-05	4.77E-03
N,N-Diethylaniline	121-69-7	5.45E-09	<	5.45E-09	1.97E-06
Naphthalene	91-20-3	1.08E-07	1.98E-07	1.98E-07	7.17E-05
Nickel (Ni) Compounds		1.99E-07	7.24E-08	1.99E-07	7.20E-05
o-Toluidine	95-53-4	<	1.50E-07	1.50E-07	5.42E-05
o-Xylene	95-47-6	3.49E-08	2.58E-07	2.58E-07	9.34E-05
Phenol	108-95-2	3.11E-07	1.84E-07	3.11E-07	1.13E-04
Propylene Oxide	75-56-9	0.00E+00	1.75E-06	1.75E-06	6.35E-04
Styrene	100-42-5	9.61E-09	7.25E-07	7.25E-07	2.62E-04
Tetrachloroethene (Perchloroethylene)	127-18-4	5.32E-08	4.44E-08	5.32E-08	1.93E-05
Toluene	108-88-3	1.07E-07	9.26E-06	9.26E-06	3.35E-03

Methodology

Rubber Extrusion Rate (lbs/yr) = rate of tire retreading (tires/hr) x 8760 (hrs/yr) x weight of green rubber per tire (lbs/tire)

PTE (tons/yr) = Rubber extrusion Rate (lb/yr) x emission factor (lb/lb rubber) x (1 ton/2000 lb)

Notes

* Emission factors are adapted from AP-42, Chapter 4.12, Table 4.12-6: Extruder Operations (draft-Dec. 1997)

* Emission factors for all compounds 4 and 6 were used because these are the rubber compounds the source will use in the extruding process.

* Results are for total chromium. Actual tread was tested for hexavalent chromium. It was not detected.

**Appendix A: Summary of Emission Calculations
VOC, PM, and HAP Emissions**

**Company Name: Raben Tire Company, Inc.
Address: 12580 South Northgate Dr.
Haubstadt, IN. 47639
Permit #: 051-21538-00047
Reviewer: ERG/HJ
Date: August 26, 2005**

Pollutant	Grinding (tpy)	Rubber Solution Application (tpy)	Extruding (tpy)	Curing (tpy)	30Hp Water Heaters (tpy)	Total (tpy)
CO	0.00	0.00	0.00	0.00	0.36	0.36
NO _x	0.00	0.00	0.00	0.00	0.42	0.42
PM/PM ₁₀	16	0.00	1.13E-05	0.00	0.03	16
SO ₂	0.00	0.00	0.00	0.00	2.549E-03	2.55E-03
VOC	0.68	16.0	4.45E-03	1.48	0.02	18.2
Pb	2.7E-03	0.00	0.00	0.00	0.00	2.7E-03
Total HAP	0.17	0.00	0.01	0.65	0.00	0.832