



DATE: February 19, 2008
TO: Interested Parties / Applicant
RE: Central Indiana Redi Strip, Incorporated / R097-25245-00625
FROM: Patrick N. Carroll, Deputy Director
Department of Public Works

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 501, 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 Indianapolis Office of Environmental Services, Air Permits at (317) 327-2234.

Enclosures



Air Quality Hotline: 317-327-4AIR | knozone.com

Department of Public Works
Office of Environmental Services

2700 Belmont Avenue
Indianapolis, IN 46221

317-327-2234
Fax 327-2274
TDD 327-5186
indygov.org/dpw



February 19, 2008

Mr. Boyd Birchler
Central Indiana Redi Strip, Incorporated
4020 Millersville Road
Indianapolis, Indiana 46205

Certified Mail Number: 7007 0710 0005 3965 7388

Re: Registered Construction and Operation Status,
R097-25245-00625

Dear Mr. Birchler:

The application from Central Indiana Redi Strip, Incorporated received on August 23, 2007, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.1, it has been determined that the following stationary metal cleaning operation located at 4020 Millersville Road, Indianapolis, Indiana 46205 is classified as registered:

- (a) One (1) blast room, identified as emission unit Blast Room # 1, utilizing aluminum oxide as the blasting media and consisting of one 3/8 inch blasting nozzle operating at eighty (80) pounds per square inch pressure. The maximum hourly blasting media process rate is 0.48 tons per hour. Blast Room # 1 utilizes one (1) Empire Reclaimer cyclone and one (1) Torit baghouse for emissions control exhausting indoors. Blast Room # 1 was constructed in 1998.
- (b) One (1) blast room, identified as emission unit Blast Room # 2, utilizing plastic beads as the blasting media and consisting of one 3/8 inch blasting nozzle operating at sixty (60) pounds per square inch pressure. The maximum hourly blasting media process rate is 0.14 tons per hour. Blast Room # 2 utilizes one (1) Enviro Safe Reclaimer cyclone and one (1) Wheelabrator baghouse for emissions control exhausting indoors. Blast Room # 2 was constructed in 2006.

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 thirty percent (30%) 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 (sixty (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 6-4 (Fugitive Dust Emissions Limitations), the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4.
3. Pursuant to 326 IAC 6-3-2, particulate matter (PM) emissions from Blast Room # 1 shall not exceed 2.51 pounds per hour when operating at a process weight rate of 0.48 tons per hour. Pursuant to 326 IAC 6-3-2, particulate matter (PM) emissions from Blast Room # 2 shall not exceed 1.10 pounds per hour when operating at a process weight rate of 0.14 tons per hour. The pound per hour limitation was calculated with the following equation:



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Fax 327-2274
TDD 327-5186
indygov.org/dpw

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:

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

The Empire Reclaimer cyclone and the Enviro Safe Reclaimer cyclone shall be in operation at all times Blast Room # 1 and Blast Room # 2 are in operation, in order to comply with this limit

This registration is the first approval issued to this source. The source may operate according to 326 IAC 2-5.1.

An authorized individual shall provide an annual notice to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) and the City of Indianapolis, Office of Environmental Services (OES) 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:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

and

Indianapolis Office of Environmental Services
Air Compliance
2700 South Belmont Ave.
Indianapolis, IN 46221

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) and OES if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source. If you have any questions on this matter, please contact Mark Caraher, at (317) 327-2272 or mcaraher@indygov.org.

Sincerely,

ORIGINAL SIGNED BY AMANDA HENNESSY FOR

Patrick N. Carroll
Deputy Director
Department of Public Works

mbc

cc: File
OES Air Compliance – Matt Mosier
OES Enforcement
IDEM, OAQ – Mindy Hahn
Marion County Health Department

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:	Central Indiana Redi Strip, Incorporated
Address:	4020 Millersville Road, Indianapolis, Indiana 46205
City:	Indianapolis
Phone #:	(317) 545-2088
Registration #:	R097-25245-00625

Certification by the Authorized Individual	
I hereby certify that Central Indiana Redi Strip, Incorporated is :	<input type="checkbox"/> still in operation.
	<input type="checkbox"/> no longer in operation.
I hereby certify that Central Indiana Redi Strip, Incorporated is :	<input type="checkbox"/> in compliance with the requirements of Registration R097-25245-00625.
	<input type="checkbox"/> not in compliance with the requirements of Registration R097-25245-00625.
YEAR: _____	
Name (typed):	
Title:	
Signature:	
Phone Number:	
Date:	

**Indiana Department of Environmental Management
Office of Air Quality
and
Indianapolis Office of Environmental Services**

Technical Support Document (TSD) for a Registration

Source Description and Location

Source Name: Central Indiana Redi Strip, Incorporated
Source Location: 4020 Millersville Road, Indianapolis, Indiana 46205
County: Marion
SIC Code: 3471
Registration (or Exemption) No.: R097-25245-00625
Permit Reviewer: Mark Caraher

On August 23, 2007, the Office of Air Quality (OAQ) and the City of Indianapolis Office of Environmental Services (OES) received an application from Central Indiana Redi Strip, Incorporated relating to the construction and operation of a blast cleaning of materials source.

Existing Approvals

There have been no previous approvals issued to this source.

County Attainment Status

The source is located in Marion County.

Pollutant	Designation
SO ₂	Better than national standards.
CO	Attainment effective February 18, 2000, for the part of the city of Indianapolis bounded by 11 th Street on the north; Capitol Avenue on the west; Georgia Street on the south; and Delaware Street on the east. Unclassifiable or attainment effective November 15, 1990, for the remainder of Indianapolis and Marion County.
O ₃	Attainment effective October 19, 2007, for the 8-hour ozone standard. ¹
PM ₁₀	Unclassifiable effective November 15, 1990.
NO ₂	Cannot be classified or better than national standards.
Pb	Attainment effective July 10, 2000, for the part of Franklin Township bounded by Thompson Road on the south; Emerson Avenue on the west; Five Points Road on the east; and Troy Avenue on the north. Attainment effective July 10, 2000, for the part of Wayne Township bounded by Rockville Road on the north; Girls School Road on the east; Washington Street on the south; and Bridgeport Road on the west. The remainder of the county is not designated.
¹ Attainment effective October 18, 2000, for the 1-hour ozone standard for the Indianapolis area, including Marion County, and is a maintenance area for the 1-hour ozone National Ambient Air Quality Standards (NAAQS) for purposes of 40 CFR 51, Subpart X*. The 1-hour designation was revoked effective June 15, 2005.	

(a) Ozone Standards

- (1) On October 25, 2006, the Indiana Air Pollution Control Board finalized a rule revision to 326 IAC 1-4-1 revoking the one-hour ozone standard in Indiana.

- (2) On November 9, 2007, the Indiana Air Pollution Control Board finalized a temporary emergency rule to re-designate Boone, Clark, Elkhart, Floyd, LaPorte, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, Shelby, and St. Joseph as attainment for the 8-hour ozone standard.
 - (3) Volatile organic compounds (VOC) and Nitrogen Oxides (NO_x) 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 NO_x emissions are considered when evaluating the rule applicability relating to ozone. Marion County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.
- (b) **PM2.5**
Marion County has been classified as nonattainment for PM2.5 in 70 FR 943 dated January 5, 2005. Until U.S. EPA adopts specific New Source Review rules for PM2.5 emissions, it has directed states to regulate PM10 emissions as a surrogate for PM2.5 emissions pursuant to the requirements of Nonattainment New Source Review, 326 IAC 2-1.1-5.
- (c) **Other Criteria Pollutants**
Marion County has been classified as attainment or unclassifiable in Indiana for PM10, SO₂, CO and Lead. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

Fugitive Emissions

The fugitive emissions of criteria pollutants and hazardous air pollutants are counted toward the determination of 326 IAC 2-5.1-2 (Registrations) applicability.

Unpermitted Emission Units and Pollution Control Equipment

The source consists of the following unpermitted emission units:

- (a) One (1) blast room, identified as emission unit Blast Room # 1, utilizing aluminum oxide as the blasting media and consisting of one 3/8 inch blasting nozzle operating at eighty (80) pounds per square inch pressure. The maximum hourly blasting media process rate is 0.48 tons per hour. Blast Room # 1 utilizes one (1) Empire Reclaimer cyclone and one (1) Torit baghouse for emissions control exhausting indoors. Blast Room # 1 was constructed in 1998.
- (b) One (1) blast room, identified as emission unit Blast Room # 2, utilizing plastic beads as the blasting media and consisting of one 3/8 inch blasting nozzle operating at sixty (60) pounds per square inch pressure. The maximum hourly blasting media process rate is 0.14 tons per hour. Blast Room # 2 utilizes one (1) Enviro Safe Reclaimer cyclone and one (1) Wheelabrator baghouse for emissions control exhausting indoors. Blast Room # 2 was constructed in 2006.

“Integral Part of the Process” Determination

Central Indiana Redi Strip, Incorporated has submitted the following information to justify why each cyclone and each baghouse utilized for Blast Room # 1 and Blast Room # 2 operations should each be considered an integral part of the blast cleaning operation:

- (a) The purpose of the Empire Reclaimer cyclone and the Enviro Safe Reclaimer cyclone is to reclaim spent blast media for reuse in the blasting process. Blast media for each Blast Room is recirculated a minimum of eight to ten times in order to reduce the overall amount of blast media

Process/Emission Unit	Potential To Emit of the Entire Source (tons/year)							
	PM	PM10*	SO ₂	NO _x	VOC	CO	Total HAPs	Highest Single HAP / Combined HAP
* Under the Part 70 Permit program (40 CFR 70), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), not particulate matter (PM), is considered as a "regulated air pollutant". US EPA has directed states to regulate PM10 emissions as surrogate for PM2.5 emissions.								

- (a) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1(16)) of PM and PM10 are each within the ranges listed in 326 IAC 2-5.1-2(a)(1). The PTE of all other regulated criteria pollutants are not in the ranges listed in 326 IAC 2-5.1-2(a)(1). Therefore, the source is subject to the provisions of 326 IAC 2-5.1-2 (Registrations). A Registration will be issued.
- (b) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1(16)) of any single HAP is less than ten (10) tons per year and the PTE of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-7.

Federal Rule Applicability Determination

- (a) There are no New Source Performance Standards (NSPS)(40 CFR Part 60) (326 IAC 12) included in the registration.
- (b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14, 326 IAC 20 and 40 CFR Part 63) included in the registration.
- (c) Pursuant to 40 CFR 64.2, Compliance Assurance Monitoring (CAM) is not included in the registration, because the unlimited potential to emit of the source is less than the Title V major source thresholds and the source is not required to obtain a Part 70 or Part 71 permit.

State Rule Applicability Determination

The following state rules are applicable to the source:

- (a) 326 IAC 2-1.1-5 (Non-attainment New Source Review)
 Marion County has been designated as nonattainment for PM2.5. According to an EPA guidance memo dated April 5, 2005, PM10 is to be utilized as a surrogate for PM2.5 until the EPA can promulgate the PM2.5 implementation rule. PM10 emissions, and therefore PM2.5 emissions, from this source are less than one hundred (100) tons per twelve consecutive month period. There have been no modifications to this source such that it is a major source of PM10 emissions. Therefore, this source is not subject to nonattainment new source review requirements for PM2.5 emissions.
- (b) 326 IAC 2-2 (Prevention of Significant Deterioration (PSD) Requirements)
 This source is not a major stationary source because no attainment regulated pollutant emissions are equal to or greater than two hundred fifty (250) tons per year, this source is not one of the 28 listed source categories under 326 IAC 2-2 and no nonattainment regulated pollutant emissions are equal to or greater than one hundred (100) tons per year. There have been no modifications or revisions to this source that were major modifications pursuant to 326 IAC 2-2. Therefore, 326 IAC 2-2 (Prevention of Significant Deterioration (PSD) Requirements) is not applicable to the source.
- (c) 326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))
 The potential to emit of any single HAP is less than ten (10) tons per year and the potential to emit

of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-4.1.

- (d) 326 IAC 2-5.1-2 (Registrations)
Registration applicability is discussed under the Permit Level Determination – Registration section above.
- (e) 326 IAC 2-6 (Emission Reporting)
Pursuant to 326 IAC 2-6-1, this source is not subject to this rule, because it is not required to have an operating permit under 326 IAC 2-7 (Part 70 Permit Program), it is not located in Lake, Porter, or LaPorte County, and it does not emit lead into the ambient air at levels equal to or greater than 5 tons per year. Therefore, 326 IAC 2-6 does not apply.
- (f) 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 this permit:
 - (1) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (2) 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.
- (g) 326 IAC 6-4 (Fugitive Dust Emissions Limitations)
Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions Limitations), the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4.
- (h) 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations)
The source is not subject to the requirements of 326 IAC 6-5, because this source is not a source of fugitive particulate matter emissions. Therefore, 326 IAC 6-5 does not apply.
- (i) 326 IAC 6.5-1-2 (Particulate Matter Limitations Except Lake County) and 326 IAC 6.5-6 (Marion County)
This source has the potential to emit particulate of less than one hundred (100) tons per year and has actual emissions less than ten (10) tons per year (see Appendix A page 3). Central Indiana Redi Strip, Incorporated is not specifically identified in 326 IAC 6.5-6 (Marion County). Therefore, 326 IAC 6.5-1-2 (Particulate Matter Limitations Except Lake County) and 326 IAC 6.5-6 (Marion County) do not apply to this source.
- (j) 326 IAC 8-1-6 (VOC Rules: General Reduction Requirements for New Facilities)
Each of the emission units at this source is not subject to the requirements of 326 IAC 8-1-6, since the unlimited potential to emit of VOC from each emission unit is less than twenty-five (25) tons per year.
- (k) 326 IAC 11 (Emission Limitations for Specific Types of Operations)
This blast cleaning operation does not perform any specific type of operation identified in 326 IAC 11 (Emission Limitations for Specific Types of Operations). Therefore, this source is not subject to 326 IAC 11.
- (l) 326 IAC 12 (New Source Performance Standards)

See Federal Rule Applicability Section of this TSD.

- (m) 326 IAC 14 (Emission Standards for Hazardous Air Pollutants)
There are no provisions under 326 IAC 14 (Emission Standards for Hazardous Air Pollutants) and 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants) applicable to any specific emission unit or operation at this source. Therefore, this source is not subject to the provisions of 326 IAC 14 (Emission Standards for Hazardous Air Pollutants) and 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
- (n) 326 IAC 20 (Hazardous Air Pollutants)
See Federal Rule Applicability Section of this TSD.

Blast Room # 1 and Blast Room # 2

- (a) 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)
Pursuant to 326 IAC 6-3-2, particulate matter (PM) emissions from Blast Room # 1 shall not exceed 2.51 pounds per hour when operating at a process weight rate of 0.48 tons per hour. Pursuant to 326 IAC 6-3-2, particulate matter (PM) emissions from Blast Room # 2 shall not exceed 1.10 pounds per hour when operating at a process weight rate of 0.14 tons per hour. The pound 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:

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

The Empire Reclaimer cyclone and the Enviro Safe Reclaimer cyclone shall be in operation at all times Blast Room # 1 and Blast Room # 2 are in operation, in order to comply with this limit (see Appendix A page 1 and 2).

Conclusion and Recommendation

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 August 23, 2007. A plant tour was conducted by OES on November 26, 2007 and additional information was submitted by Central Indiana Redi Strip, Incorporated on February 4, 2008.

The construction and operation of this source shall be subject to the conditions of the attached registration No. R097-25245-00625. The staff recommends to the Administrator that this registration be approved.

City of Indianapolis OES Contact

- (a) Questions regarding this registration can be directed to Mr. Mark Caraher with The City of Indianapolis Office of Environmental Services, 2700 South Belmont Avenue, Indianapolis, Indiana 46221.
- (b) A copy of the findings is available on the Internet at: www.in.gov/idem/permits/air/pending.html.
- (c) For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.in.gov/idem/permits/guide/.

Appendix A: Emission Calculations

Abrasive Blasting - Blast Room # 1

Company Name: Central Indiana Redi Strip, Inc.

Address City IN Zip: 4020 Millersville Road, Indianapolis, IN 46205

Permit Number: 097-25245-00625

Plt ID: 097-00625

Reviewer: M. Caraher

Date: 2/5/2008

Table 1 - Emission Factors for Abrasives

Abrasive	Emission Factor	
	lb PM / lb abrasive	lb PM10 / lb PM
Sand	0.041	0.70
Grit	0.010	0.70
Steel Shot	0.004	0.86
Other	0.010	

Table 2 - Density of Abrasives (lb/ft3)

Abrasive	Density (lb/ft3)
Al oxides	160
Sand	99
Steel	487

Table 3 - Sand Flow Rate (FR1) Through Nozzle (lb/hr)

Flow rate of Sand Through a Blasting Nozzle as a Function of Nozzle pressure and Internal Diameter

Internal diameter, in	Nozzle Pressure (psig)							
	30	40	50	60	70	80	90	100
1/8	28	35	42	49	55	63	70	77
3/16	65	80	94	107	122	135	149	165
1/4	109	138	168	195	221	255	280	309
5/16	205	247	292	354	377	420	462	507
3/8	285	355	417	477	540	600	657	720
7/16	385	472	560	645	755	820	905	940
1/2	503	615	725	835	945	1050	1160	1265
5/8	820	990	1170	1336	1510	1680	1850	2030
3/4	1140	1420	1670	1915	2160	2400	2630	2880
1	2030	2460	2900	3340	3780	4200	4640	5060

Calculations

Adjusting Flow Rates for Different Abrasives and Nozzle Diameters

Flow Rate (FR) = Abrasive flow rate (lb/hr) with internal nozzle diameter (ID)

FR1 = Sand flow rate (lb/hr) with internal nozzle diameter (ID1) From Table 3 =

D = Density of abrasive (lb/ft3) From Table 2 =

D1 = Density of sand (lb/ft3) =

ID = Actual nozzle internal diameter (in) =

ID1 = Nozzle internal diameter (in) from Table 3 =

600
160
99
0.375
0.375

Flow Rate (FR) (lb/hr) = 969.70 per nozzle
Process Rate (tons/hr) = 0.48

Uncontrolled Emissions (E, lb/hr)

EF = emission factor (lb PM/ lb abrasive) From Table 1 =

FR = Flow Rate (lb/hr) =

w = fraction of time of wet blasting =

N = number of nozzles =

0.010
969.70
0
1

Uncontrolled Emissions =	9.70 lb/hr
	42.47 ton/yr

Cyclone controlled Emissions =	0.97 lb/hr
	4.23 ton/yr

METHODOLOGY

Emission Factors from STAPPA/ALAPCO "Air Quality Permits", Vol. I, Section 3 "Abrasive Blasting" (1991 edition)

Ton/yr = lb/hr X 8760 hr/yr X ton/2000 lbs

Flow Rate (FR) (lb/hr) = FR1 x (ID/ID1)² x (D/D1)

Process Rate (tons/hr) = FR/2000

E = EF x FR x (1-w/200) x N

w should be entered in as a whole number (if w is 50%, enter 50)

Estimated cyclone efficiency = 90%

Appendix A: Emission Calculations
 Abrasive Blasting - Blast Room # 2
 Company Name: Central Indiana Redi Strip, Inc.
 Address City IN Zip: 4020 Millersville Road, Indianapolis, IN 46205
 Permit Number 097-25245-00625
 Pit ID: 097-00625
 Reviewer: M. Caraher
 Date: 2/5/2008

Table 1 - Emission Factors for Abrasives

Abrasive	Emission Factor	
	lb PM / lb abrasive	lb PM10 / lb PM
Sand	0.041	0.70
Grit	0.010	0.70
Steel Shot	0.004	0.86
Other	0.010	

Table 2 - Density of Abrasives (lb/ft³)

Abrasive	Density (lb/ft ³)
Al oxides	160
Sand	99
Steel	487
Plastic	59

Table 3 - Sand Flow Rate (FR1) Through Nozzle (lb/hr)

Flow rate of Sand Through a Blasting Nozzle as a Function of Nozzle pressure and Internal Diameter

Internal diameter, in	Nozzle Pressure (psig)							
	30	40	50	60	70	80	90	100
1/8	28	35	42	49	55	63	70	77
3/16	65	80	94	107	122	135	149	165
1/4	109	138	168	195	221	255	280	309
5/16	205	247	292	354	377	420	462	507
3/8	285	355	417	477	540	600	657	720
7/16	385	472	560	645	755	820	905	940
1/2	503	615	725	835	945	1050	1160	1265
5/8	820	990	1170	1336	1510	1680	1850	2030
3/4	1140	1420	1670	1915	2160	2400	2630	2880
1	2030	2460	2900	3340	3780	4200	4640	5060

Calculations

Adjusting Flow Rates for Different Abrasives and Nozzle Diameters

Flow Rate (FR) = Abrasive flow rate (lb/hr) with internal nozzle diameter (ID)
 FR1 = Sand flow rate (lb/hr) with internal nozzle diameter (ID1) From Table 3 =
 D = Density of abrasive (lb/ft³) From Table 2 =
 D1 = Density of sand (lb/ft³) =
 ID = Actual nozzle internal diameter (in) =
 ID1 = Nozzle internal diameter (in) from Table 3 =

477
59
99
0.375
0.375

Flow Rate (FR) (lb/hr) = 284.27 per nozzle
 Process Rate (tons/hr) = 0.14

Uncontrolled Emissions (E, lb/hr)

EF = emission factor (lb PM/ lb abrasive) From Table 1 =
 FR = Flow Rate (lb/hr) =
 w = fraction of time of wet blasting =
 N = number of nozzles =

0.010
284.27
0
1

Uncontrolled Emissions = 2.84 lb/hr
 12.45 ton/yr

Cyclone controlled Emissions = 0.28 lb/hr
 1.24 ton/yr

METHODOLOGY

Emission Factors from STAPPA/ALAPCO "Air Quality Permits", Vol. I, Section 3 "Abrasive Blasting" (1991 edition)
 Ton/yr = lb/hr X 8760 hr/yr X ton/2000 lbs
 Flow Rate (FR) (lb/hr) = FR1 x (ID/ID1)² x (D/D1)
 Process Rate (tons/hr) = FR/2000
 E = EF x FR x (1-w/200) x N
 w should be entered in as a whole number (if w is 50%, enter 50)
 Specific Gravity of polyethylene (plastic) = 0.95
 Estimated cyclone efficiency = 90%

Appendix A: Emission Calculations

Emissions Summary

Company Name: Central Indiana Redi Strip, Inc.

Address City IN Zip: 4020 Millersville Road, Indianapolis, IN 46205

Permit Number: 097-25245-00625

Pit ID: 097-00625

Reviewer: M. Caraher

Date: 2/5/2008

Plant Wide Emissions Summary (tons per year)							Highest Single	Combination
	PM	PM10	NOX	SO2	VOC	CO	HAP	HAP
Blast Room # 1	4.23	4.23	0.00	0.00	0.00	0.00	0.00	0.00
Blast Room # 2	1.24	1.24	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00
Potential to Emit	5.47	5.47	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00