INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live.

Joseph E. Kernan
Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.in.gov/idem

December 17, 2003

TO: Interested Parties / Applicant

RE: Cylicron Engineered Cylinders, LLC / 019-18176-00113

FROM: Paul Dubenetzky
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval - Effective Immediately

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 13-15-5-3, this permit is effective immediately, unless a petition for stay of effectiveness is filed and granted according to IC 13-15-6-3, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3 and IC 13-15-6-1 require 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
FNPER.dot 9/16/03

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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December 17, 2003

Mr. Brice Bushau
Cylicron Engineered Cylinders, LLC
P.O. Box 4185
Jeffersonville, IN 47131

Re: Exempt Construction and Operation Status
019-18176, Plt ID 019-00113

Dear Mr. Bushau:

The application from Cylicron Engineered Cylinders, LLC, received on November 7, 2003, and modified on November 21, 2003, with additional information received December 2, 3, 4 and 5, 2003, has been reviewed. Based on the data submitted and the provisions provided in 326 IAC 2-1.1-3, it has been determined that the construction and operation of the cylinder manufacturing facilities located at 5171 Maritime Road, Jeffersonville, Indiana 47130, are classified as exempt from air pollution permit requirements.

The source will consist of the following facilities/units:

(a) One (1) maintenance cold cleaner, identified as Tank 1, initially constructed between 1985 and 1987, usage: 2 gallons of mineral spirits per day.

(b) The following machining and metal working operations, with a total capacity of approximately 7,000 pounds (3.5 tons) per hour:

(1) One (1) steel cutting saw for cutting heavy wall pipe, with an aqueous cutting coolant continually flooding the interface, capacity: 0.875 tons of steel per hour.

(2) One (1) CNC roughing lathe used for machining pipe sections to the appropriate diameter with a cutting coolant continually flooding the interface, capacity: 3.5 tons of steel per hour.

(3) Four (4) heating torches, using a BOC gas which is a LPG mixture with Methyl Acetylene - Propadiene gas, for inserting head assemblies into the cylinder body, capacity: 0.90 million British thermal units per hour, each.

(4) One (1) hand held heating torch, using a BOC gas which is a LPG mixture with Methyl Acetylene - Propadiene gas, for inserting head assemblies into the cylinder body, capacity: 0.90 million British thermal units per hour.

(5) Two (2) face and center drills, capacity: 1.75 tons of steel per hour, each.

(6) Seven (7) CNC lathe machines, with a cutting coolant continually flooding the

interface, capacity: 0.5 tons of steel per hour, each.

(7) Six (6) key cutting machines, with a coolant misted onto the interface, capacity: 0.875 tons of steel per hour, each.

(8) Four (4) steel tube grinders, with a cutting coolant continually flooding the interface, capacity: 1.17 tons of steel per hour, each.

(9) One (1) Ramco centerless grinder for grinding bearings to the required size and finish, with a cutting coolant continually flooding the interface, capacity: 1.25 tons of steel per hour.

(10) One (1) HMT CNC lathe for bearing manufacture, with a cutting coolant continually flooding the interface, capacity: 1.25 tons of steel per hour.

(11) Three (3) CNC lathes for head operations, with cutting coolant continually flooding the interface, capacity: 1.75 tons of steel per hour, each.

(12) One (1) CNC lathe for turning and boring operations, with cutting coolant continually flooding the interface, capacity: 1.75 tons of steel per hour.

(13) Six (6) manual lathes for turning and boring operations, capacity: 3.5 tons of steel per hour, each.

(c) The following welding operations:

(1) Three (3) metal inert gas (MIG) welding stations, capacity: 6 pounds of wire per hour, each.

(2) Two (2) stick welding stations, capacity: 7 pounds of electrode per hour, each.

(3) Two (2) maintenance stick welders, capacity: 7 pounds of electrode per hour, each.

(d) Twenty-six (26) natural gas fired space heaters, capacity: 11.427 million British thermal units per hour, total.

(e) One (1) natural gas fired stove, equipped with five (5) burners, capacity: 0.072 million British thermal units per hour per burner.

(f) The following above ground storage tanks:

(1) One (1) above ground storage tank, identified as S/N 174465, constructed in 1973, storing methyl acetylene, capacity: 1,000 gallons.

(2) One (1) above ground storage tank, identified as S/N 862652, constructed in 1998, storing methyl acetylene, capacity: 500 gallons.

(3) One (1) above ground storage tank, identified as S/N 124, constructed in 1977, storing liquid oxygen, capacity: 3,000 gallons.

(g) One (1) subgrade Henry chip conveyor system.

The following conditions shall be applicable to the facilities at this source:

(a) 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:

(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.

(b) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes) the particulate emission rate from the welding operations shall be limited by the following:

Interpolation and extrapolation 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

(c) Pursuant to 326 IAC 8-3-5(a) (Cold Cleaner Degreaser Operation and Control) for cold cleaner degreaser operations without remote solvent reservoirs, existing as of July 1, 1990, located in Clark, Elkhart, Floyd, Lake, Marion, Porter or St. Joseph Counties, the Permittee shall ensure that the following control equipment requirements are met:

(1) Equip the degreaser with a cover. The cover must be designed so that it can be easily operated with one (1) hand if:

(A) the solvent volatility is greater than two (2) kiloPascals (fifteen (15) millimeters of mercury or three-tenths (0.3) pounds per square inch) measured at thirty-eight degrees Celsius ($38^{O}C$) (one hundred degrees Fahrenheit ($100^{O}F$));

(B) the solvent is agitated; or

(C) the solvent is heated.

(2) Equip the degreaser with a facility for draining cleaned articles. If the solvent volatility is greater than four and three-tenths (4.3) kiloPascals (thirty-two (32) millimeters of mercury) or six-tenths (0.6) pounds per square inch) measured at thirty-eight degrees Celsius ($38^{O}C$) (one hundred degrees Fahrenheit ($100^{O}F$)), then the drainage facility must be internal such that articles are enclosed under the cover while draining. The drainage facility may be external for applications where an internal type cannot fit into the cleaning system.

(3) Provide a permanent, conspicuous label which lists the operating requirements outlined in subsection (b).

(4) The solvent spray, if used, must be a solid, fluid stream and shall be applied at a pressure which does not cause excessive splashing.

(5) Equip the degreaser with one (1) of the following control devices if the solvent volatility is greater than four and three-tenths (4.3) kiloPascals (thirty-two (32) millimeters of mercury) or six-tenths (0.6) pounds per square inch) measured at thirty-eight degrees Celsius ($38^{O}C$) (one hundred degrees Fahrenheit ($100^{O}F$)), or if the solvent is heated to a temperature greater than forty-eight and nine-tenths degrees Celsius ($48.9^{O}C$) (one hundred twenty degrees Fahrenheit ($120^{O}F$)):

(A) A freeboard that attains a freeboard ratio of seventy-five hundredths (0.75) or greater.

(B) A water cover when solvent is used is insoluble in, and heavier than, water.

(C) Other systems of demonstrated equivalent control such as a refrigerated chiller of carbon adsorption. Such systems shall be submitted to the U.S. EPA as a SIP revision.

(d) Pursuant to 326 IAC 8-3-5(b) (Cold Cleaner Degreaser Operation and Control), the owner or operator of the cold cleaning facility shall ensure that the following operating requirements are met:

(1) Close the cover whenever articles are not being handled in the degreaser.

(2) Drain cleaned articles for at least fifteen (15) seconds or until dripping ceases.

(3) Store waste solvent only in covered containers and prohibit the disposal or transfer of waste solvent in any manner in which greater than twenty percent (20%) of the waste solvent by weight could evaporate.

(e) Compliance with (c) and (d) shall also ensure compliance with 326 IAC 8-3-2 (Cold Cleaner Operations).

(f) Any change or modification to the welding operations which increases the potential to emit particulate to 4.50 tons per year or more shall require prior IDEM, OAQ, approval.

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,

Original signed by Paul Dubenetzky
Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

CAP/MES
cc: File - Clark County
Air Compliance - Ray Schick
Permit Tracking
Air Programs Section - Michele Boner

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for an Exempt Construction and Operation Status Letter

Source Background and Description

Source Name:	**Cylicron Engineered Cylinders, LLC**
Source Location:	**5171 Maritime Road**
County:	**Clark**
SIC Code:	**3443**
Exemption No.:	**019-18176-00113**
Permit Reviewer:	**CarrieAnn Paukowits**

The Office of Air Quality (OAQ) has reviewed an application from Cylicron Engineered Cylinders, LLC, relating to the construction and operation of a cylinder manufacturing source.

Permitted Emission Units and Pollution Control Equipment

There are no permitted emission units and pollution control devices operating at this source during this review process.

Unpermitted Emission Units and Pollution Control Equipment

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

New Emission Units and Pollution Control Equipment

The source consists of the following new facilities/units:

(a) One (1) maintenance cold cleaner, identified as Tank 1, initially constructed between 1985 and 1987, usage: 2 gallons of mineral spirits per day.

(b) The following machining and metal working operations, with a total capacity of approximately 7,000 pounds (3.5 tons) per hour:

(1) One (1) steel cutting saw for cutting heavy wall pipe, with an aqueous cutting coolant continually flooding the interface, capacity: 0.875 tons of steel per hour.

(2) One (1) CNC roughing lathe used for machining pipe sections to the appropriate diameter with a cutting coolant continually flooding the interface, capacity: 3.5 tons of steel per hour.

(3) Four (4) heating torches, using a BOC gas which is a LPG mixture with Methyl Acetylene - Propadiene gas, for inserting head assemblies into the cylinder body, capacity: 0.90 million British thermal units per hour, each.

(4) One (1) hand held heating torch, using a BOC gas which is a LPG mixture with Methyl Acetylene - Propadiene gas, for inserting head assemblies into the cylinder body, capacity: 0.90 million British thermal units per hour.

(5) Two (2) face and center drills, capacity: 1.75 tons of steel per hour, each.

(6) Seven (7) CNC lathe machines, with a cutting coolant continually flooding the interface, capacity: 0.5 tons of steel per hour, each.

(7) Six (6) key cutting machines, with a coolant misted onto the interface, capacity: 0.875 tons of steel per hour, each.

(8) Four (4) steel tube grinders, with a cutting coolant continually flooding the interface, capacity: 1.17 tons of steel per hour, each.

(9) One (1) Ramco centerless grinder for grinding bearings to the required size and finish, with a cutting coolant continually flooding the interface, capacity: 1.25 tons of steel per hour.

(10) One (1) HMT CNC lathe for bearing manufacture, with a cutting coolant continually flooding the interface, capacity: 1.25 tons of steel per hour.

(11) Three (3) CNC lathes for head operations, with cutting coolant continually flooding the interface, capacity: 1.75 tons of steel per hour, each.

(12) One (1) CNC lathe for turning and boring operations, with cutting coolant continually flooding the interface, capacity: 1.75 tons of steel per hour.

(13) Six (6) manual lathes for turning and boring operations, capacity: 3.5 tons of steel per hour, each.

(c) The following welding operations:

(1) Three (3) metal inert gas (MIG) welding stations, capacity: 6 pounds of wire per hour, each.

(2) Two (2) stick welding stations, capacity: 7 pounds of electrode per hour, each.

(3) Two (2) maintenance stick welders, capacity: 7 pounds of electrode per hour, each.

(d) Twenty-six (26) natural gas fired space heaters, capacity: 11.427 million British thermal units per hour, total.

(e) One (1) natural gas fired stove, equipped with five (5) burners, capacity: 0.072 million British thermal units per hour per burner.

(f) The following above ground storage tanks:

(1) One (1) above ground storage tank, identified as S/N 174465, constructed in 1973, storing methyl acetylene, capacity: 1,000 gallons.

(2) One (1) above ground storage tank, identified as S/N 862652, constructed in 1998, storing methyl acetylene, capacity: 500 gallons.

(3) One (1) above ground storage tank, identified as S/N 124, constructed in 1977, storing liquid oxygen, capacity: 3,000 gallons.

(g) One (1) subgrade Henry chip conveyor system.

Existing Approvals

There are no existing approvals for this source at this location.

Enforcement Issue

There are no enforcement actions pending.

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 November 7, 2003, and modified on November 21, 2003, with additional information received December 2, 3, 4 and 5, 2003

Emission Calculations

See pages 1 through 6 of 6 of Appendix A of this document for detailed emissions calculations.

Potential To Emit

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	4.97
PM_{10}	4.99
SO_2	0.032

VOC	3.28
CO	4.50
NO_X	6.33

HAPs	Potential To Emit (tons/year)
Individual	negligible
TOTAL	0.100

The potential to emit (as defined in 326 IAC 2-5.1-2) of PM and PM_{10} are less than five (5) tons per year, the potential to emit of NO_X, VOC and SO_2 are less than ten (10) tons per year, the potential to emit of CO is less than twenty-five (25) tons per year, and this source is not a major source of HAPs. Therefore, the total potential to emit of the source is below permitting levels for all regulated pollutants, and, pursuant to 326 IAC 2-1.1-3, the source will operate at an exempt level of operation.

County Attainment Status

The source is located in Clark County.

Pollutant	Status
PM_{10}	attainment
SO_2	attainment
NO_2	attainment
Ozone	maintenance attainment
CO	attainment
Lead	attainment

(a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Clark County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(b) Clark County has been classified as attainment or unclassifiable for all remaining criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

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 one hundred (100) tons per year,

(b) a single hazardous air pollutant (HAP) is less than ten (10) tons per year, and

(c) any combination of HAPs is less than twenty-five (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) applicable to this source.

(b) The requirements of 40 CFR Part 63, Subpart T, National Emission Standards for Halogenated Solvent Cleaning, are not applicable to the one (1) maintenance cold cleaner because this cold cleaner does not use any halogenated solvents.

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

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

326 IAC 5-1 (Opacity)

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 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 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 6-1 (County Specific Particulate Matter Limitations)

This source, to be located in Clark County, has the potential to emit less than one hundred (100) tons per year of particulate matter and has actual emissions less than ten (10) tons per year of particulate matter per year. Therefore, pursuant to 326 IAC 6-1-1 (a)(2), the requirements of 326 IAC 6-1 are not applicable.

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

The welding operations may consume more than 625 pounds of weld wire or rod per day. Therefore, the requirements of 326 IAC 6-3-2 are applicable to those operations. All other facilities have potential emissions less than 0.551 pounds per hour of particulate. Therefore, the requirements of 326 IAC 6-3-2 are only applicable to the welding operations. Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes) the particulate emission rate from the welding operations shall be limited by the following:

Interpolation and extrapolation 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

326 IAC 8-3 (Organic Solvent Degreasing Operations)

The cold cleaner degreaser without a remote solvent reservoir was existing as of July 1, 1990 in Clark County. Therefore, the requirements of 326 IAC 8-3-5 are applicable. It was also a new facility after January 1, 1980, performing organic solvent degreasing operations. Therefore, the requirements of 326 IAC 8-3-2 are also applicable.

(a) Pursuant to 326 IAC 8-3-5(a) (Cold Cleaner Degreaser Operation and Control) for cold cleaner degreaser operations without remote solvent reservoirs, existing as of July 1, 1990, located in Clark, Elkhart, Floyd, Lake, Marion, Porter or St. Joseph Counties, the Permittee shall ensure that the following control equipment requirements are met:

(1) Equip the degreaser with a cover. The cover must be designed so that it can be easily operated with one (1) hand if:

(A) the solvent volatility is greater than two (2) kiloPascals (fifteen (15) millimeters of mercury or three-tenths (0.3) pounds per square inch) measured at thirty-eight degrees Celsius ($38^{O}C$) (one hundred degrees Fahrenheit ($100^{O}F$));

(B) the solvent is agitated; or

(C) the solvent is heated.

(2) Equip the degreaser with a facility for draining cleaned articles. If the solvent volatility is greater than four and three-tenths (4.3) kiloPascals (thirty-two (32) millimeters of mercury) or six-tenths (0.6) pounds per square inch) measured at thirty-eight degrees Celsius ($38^{O}C$) (one hundred degrees Fahrenheit ($100^{O}F$)), then the drainage facility must be internal such that articles are enclosed under the cover while draining. The drainage facility may be external for applications where an internal type cannot fit into the cleaning system.

(3) Provide a permanent, conspicuous label which lists the operating requirements outlined in subsection (b).

(4) The solvent spray, if used, must be a solid, fluid stream and shall be applied at a pressure which does not cause excessive splashing.

(5) Equip the degreaser with one (1) of the following control devices if the solvent volatility is greater than four and three-tenths (4.3) kiloPascals (thirty-two (32) millimeters of mercury) or six-tenths (0.6) pounds per square inch) measured at thirty-eight degrees Celsius ($38^{O}C$) (one hundred degrees Fahrenheit ($100^{O}F$)), or if the solvent is heated to a temperature greater than forty-eight and nine-tenths degrees Celsius ($48.9^{O}C$) (one hundred twenty degrees Fahrenheit ($120^{O}F$)):

(A) A freeboard that attains a freeboard ratio of seventy-five hundredths (0.75) or greater.

(B) A water cover when solvent is used is insoluble in, and heavier than, water.

(C) Other systems of demonstrated equivalent control such as a refrigerated chiller of carbon adsorption. Such systems shall be submitted to the U.S. EPA as a SIP revision.

(b) Pursuant to 326 IAC 8-3-5(b) (Cold Cleaner Degreaser Operation and Control), the owner or operator of the cold cleaning facility shall ensure that the following operating requirements are met:

(1) Close the cover whenever articles are not being handled in the degreaser.

(2) Drain cleaned articles for at least fifteen (15) seconds or until dripping ceases.

(3) Store waste solvent only in covered containers and prohibit the disposal or transfer of waste solvent in any manner in which greater than twenty percent (20%) of the waste solvent by weight could evaporate.

(c) Compliance with (c) and (d) shall also ensure compliance with 326 IAC 8-3-2 (Cold Cleaner Operations).

Conclusion

The construction and operation of this cylinder manufacturing source shall be subject to the conditions of the attached proposed Exempt Construction and Operation Status letter 019-18176-00113.

Appendix A: Emission Calculations
Machining and Metal Working

Company Name: **Cylicron Engineered Cylinders, LLC**
Address City IN Zip: **5171 Maritime Road, Jeffersonville, IN 47130**
Exemption No./Plt ID: **019-18176-00113**
Reviewer: **CarrieAnn Paukowits**
Date: **November 7, 2003**

Material	Total Capacity (tons/hr)	PM emission factor (lbs/ton)	PM10 emission factor (lbs/ton)	PM emissions (lbs/hr)	PM10 emissions (lbs/hr)	PM emissions (tons/yr)	PM10 emissions (tons/yr)
Machining and metal working	3.5	0.0225	0.0045	0.079	0.016	0.345	0.069

Methodology
PM and PM10 emissions (lbs/hr) = Total capacity (tons/hr) x emission factor (lbs/ton)
PM and PM10 emissions (tons/yr) = emissions (lbs/hr) x 8,760 hrs/yr / 2,000 lbs/ton
Emisson factor from FIRES 6.23, SCC 3-04-003-60, 0.0045 lb PM10/ton of metal castings.
PM emission factor developed assuming PM10 is 20% of PM emissions

Appendix A: Emission Calculations
Welding and Thermal Cutting

Company Name: Cylicron Engineered Cylinders, LLC
Address City IN Zip: 5171 Maritime Road, Jeffersonville, IN 47130
Exemption No./Plt ID: 019-18176-00113
Reviewer: CarrieAnn Paukowits
Date: November 7, 2003

PROCESS	Number of Stations	Max. electrode consumption per station		EMISSION FACTORS * (lb pollutant / lb electrode)				EMISSIONS (lb/hr)				TOTAL HAPS (lb/hr)
WELDING		(lbs/hr)		PM = PM10	Mn	Ni	Cr	PM = PM10	Mn	Ni	Cr	
Submerged Arc	0	0		0.036				0.000	0	0.000	0	0.000
Metal Inert Gas (MIG)(ER5154)	3	6		0.0241	0.000034		0.00001	0.434	0.000612	0.000	0.00018	0.001
Stick (E7018 electrode)	4	7		0.0211				0.591	0	0.000	0	0.000
Tungsten Inert Gas (TIG)(carbon steel)	0	0		0.0055				0.000	0	0.000	0	0.000
Oxyacetylene(carbon steel)	0	0		0.0055				0.000	0	0.000	0	0.000

FLAME CUTTING	Number of Stations	Max. Metal Thickness Cut (in.)	Max. Metal Cutting Rate (in./minute)	EMISSION FACTORS (lb pollutant/1,000 inches cut, 1" thick)				EMISSIONS (lbs/hr)				TOTAL HAPS (lb/hr)
				PM = PM10	Mn	Ni	Cr	PM = PM10	Mn	Ni	Cr	
Oxyacetylene	0	0	0	0.1622	0.0005	0.0001	0.0003	0.000	0.000	0.000	0.000	0.000
Oxymethane	0	0	0	0.0815	0.0002		0.0002	0.000	0.000	0.000	0.000	0.000
Plasma	0	0	0					0.000	0.000	0.000	0.000	0.000

EMISSION TOTALS	PM = PM10	Mn	Ni	Cr	Total HAPs
Potential Emissions lbs/hr	1.02	0.001	0.000	0.000	0.001
Potential Emissions lbs/day	24.6	0.015	0.000	0.004	0.019
Potential Emissions tons/year	**4.49**	0.003	0.000	0.001	0.003

METHODOLOGY

*Emission Factors are default values for carbon steel unless a specific electrode type is noted in the Process column. Consult AP-42 or other reference for different electrode types.

Welding emissions, lb/hr: (# of stations)(max. lbs of electrode used/hr/station)(emission factor, lb. pollutant/lb. of electrode used)

Cutting emissions, lb/hr: (# of stations)(max. metal thickness, in.)(max. cutting rate, in./min.)(60 min./hr.)(emission factor, lb. pollutant/1,000 in. cut, 1" thick)

Emissions, lbs/day = emissions, lbs/hr x 24 hrs/day

Emissions, tons/yr = emissions, lb/hr x 8,760 hrs/day x 1 ton/2,000 lbs.

Plasma cutting emission factors are from the American Welding Society study published in Sweden (March 1994).

Welding and other flame cutting emission factors are from an internal training session document.

See AP-42, Chapter 12.19 for additional emission factors for welding.

Appendix A: Emission Calculations
Cold Cleaning and Coolant Usage

Company Name: **Cylicron Engineered Cylinders, LLC**
Address City IN Zip: **5171 Maritime Road, Jeffersonville, IN 47130**
Exemption No./Plt ID: **019-18176-00113**
Reviewer: **CarrieAnn Paukowits**
Date: **November 7, 2003**

Material	Usage (gal/day)	Density (lbs/gal)	Volume % VOC	Weight % VOC	Weight % HAP	VOC Emissions (tons/yr)	HAP Emissions (tons/yr)
Degreaser							
Mineral Spirits	2	6.54	100.00%	100.00%	0.00%	2.39	0.00

Material	Usage (gal/year)	VOC Content (lbs/gal)	VOC Emissions (tons/yr)
Coolant			
Syltilo 9902	330	0.72	0.12
Blue Chip Permasol	55	2.0	0.06
Master Chemical SC 125	660	0.5	0.17
Cutter EXP	275	1.63	0.22
		Totals:	**0.563**

Methodology
VOC emissions (tons/yr) = Usage (gal/day) x Density (lbs/gal) x Weight % VOC x 365 days/yr / 2,000 lbs/ton
HAP emissions (tons/yr) = Usage (gal/day) x Density (lbs/gal) x Weight % HAP x 365 days/yr / 2,000 lbs/ton
There are no HAPs in these materials.

Appendix A: Emission Calculations
LPG-Propane
(Heat input capacity: > .3 MMBtu/hr and < 10 MMBtu/hr)

Company Name: Cylicron Engineered Cylinders, LLC
Address City IN Zip: 5171 Maritime Road, Jeffersonville, IN 47130
Exemption No./Plt ID: 019-18176-00113
Reviewer: CarrieAnn Paukowits
Date: November 7, 2003

Heat Input Capacity MMBtu/hr	Potential Throughput kgals/year	SO2 Emission factor = 0.10 x S S = Sulfur Content =	0.15 Conservative assumption
1.80	167.74		

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/kgal	0.4	0.4	0.0 *(0.10S)*	14.0	0.5 **TOC value	1.9
Potential Emission in tons/yr	0.034	0.034	0.001	1.17	0.042	0.159

*PM emission factor is filterable PM only. PM10 emission factor is assumed to be the same as PM based on a footnote in Table 1.5-1, therefore PM10 is filterable only as well.

**The VOC value given is TOC. The methane emission factor is 0.2 lb/kgal.

Methodology

1 gallon of LPG has a heating value of 94,000 Btu
1 gallon of propane has a heating value of 91,500 Btu (use this to convert emission factors to an energy basis for propane)
(Source - AP-42 (Supplement B 10/96) page 1.5-1)
Potential Throughput (kgals/year) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1kgal per 1000 gallon x 1 gal per 0.0915 MMBtu
Emission Factors are from AP42 (Supplement B 10/96), Table 1.5-1 (SCC #1-02-010-02)
Emission (tons/yr) = Throughput (kgals/yr) x Emission Factor (lb/kgal) / 2,000 lb/ton

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
One (1) Stove and Twenty-six (26) Space Heaters

Company Name: **Cylicron Engineered Cylinders, LLC**
Address City IN Zip: **5171 Maritime Road, Jeffersonville, IN 47130**
Exemption No./Plt ID: **019-18176-00113**
Reviewer: **CarrieAnn Paukowits**
Date: **November 7, 2003**

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
11.79	103.25

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.098	0.392	0.031	5.16	0.284	4.337

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 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
See page 6 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
One (1) Stove and Twenty-six (26) Space Heaters
HAPs Emissions

Company Name: Cylicron Engineered Cylinders, LLC
Address City IN Zip: 5171 Maritime Road, Jeffersonville, IN 47130
Exemption No./Plt ID: 019-18176-00113
Reviewer: CarrieAnn Paukowits
Date: November 7, 2003

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	1.08E-04	6.20E-05	3.87E-03	9.29E-02	1.76E-04

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	**Total**
Potential Emission in tons/yr	2.58E-05	5.68E-05	7.23E-05	1.96E-05	1.08E-04	9.74E-02

Methodology is the same as page 5.

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