Grant Bauserman
International Aerospace Tubes, LLC
4760 Kentucky Avenue
Indianapolis, Indiana 46221

Re: Registered Construction and Operation Status,
097-12857-00013

Dear Mr. Bauserman:

The application from International Aerospace Tubes, received on 10/18/00, 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 manufacturer of repair steel tubing and fabricated pipes for the aerospace industry, , is classified as registered:

(a) Four (4) Plasma Spray Booths, identified as EU1, EU2, EU3, and EU4, with a combined maximum capacity to use approximately 3.9 tons of powder per year. EU1 uses DC1 as control equipment, EU2 and EU3 use DC2 as control equipment, and EU4 uses DC3 as control equipment. EU1 exhausts to S-1, EU2 and EU3 exhaust to S2, and EU3 exhausts to S3

(b) Two (2) Acid Cleaning Lines, identified as EU5 and EU6 , consisting of several tanks, each with a maximum capacity of 300 gallons, using no control equipment. EU5 Vents to V-1 and EU6 vents to V-2. These tanks will use Nitric Acid (no more than 45% by volume), potassium permanganate, Vitroklene (sodium hydroxide), and rinse water to clean titanium and stainless steel parts

(c) Three (3) Wash Lines, identified as EU7, EU8, and EU9, consisting of several tanks, most tanks having a capacity of 350 gallons, using no control equipment. EU7 vents to V-3, EU8 vents to V-4, and EU9 vents to V-5. These tanks will use mineral spirits, Vitroklene (sodium hydroxide), Jettacin, and rinse water to remove heavy oil from metal parts

(d) Glass Bead Blast Cabinet, identified as EU10, with a maximum capacity of 109 lbs/hr, using DC4 as control equipment, and venting inside the building.

(e) Glass Bead Blast Cabinet, identified as EU11, with a maximum capacity of 420 lbs/hr, using DC5 as control equipment, and venting inside the building

(f) Silicon Dioxide Blast Cabinet, identified as EU12, with a maximum capacity of 109 lbs/hr, using DC6 as control equipment, and venting inside the building

(g) Silicon Carbide Blast Cabinet, identified as EU13, with a maximum capacity of 109 lbs/hr, using DC7 as control equipment, and venting inside the building

(h) Aluminum Oxide Blast Cabinet, identified as EU14, with a maximum capacity of 507 lbs/hr, using DC5 as control equipment, and venting inside the building

(i) Nineteen (19) gas fired combustion units, identified as EU15, with a combined capacity of 4,601,194.5 Btu/hr (4.6 mmBtu/hr), using no controls and venting inside the building

(j) Small drum mounted parts washing machine with a capacity of 30 gallons, with no controls and venting inside the building

(k) Various welding operations, including semi-automatic TIG welders, TIG line welders, and TIG welding stations. Annual maximum capacity will be approximately 75 pounds of wire consumed

(l) Various electric heat treating furnaces and drying ovens

(m) Alloying process which involves the use of a syringe type device that places a small bead of brazing compound onto small metal parts. These parts are then placed in electric heat treating furnaces to complete the alloying process.

(n) Alodine treatment process which applies a protective chromate conversion on aluminum parts

(o) Anti gall coatings applied to the threads of end fittings

(p) Acetone cleaning used in various hand wiping applications at the facility.

(q) Non destructive testing of parts for cracks and other defects

The following conditions shall be applicable:

Pursuant to IAPCB Regulation 2 (Permits) and 326 IAC 2-5.5-4 (Registration Content) An authorized individual shall provide an annual notice to the Environmental Resources Management Division and the Office of Air Management that the source is in operation and in compliance with this registration pursuant to state regulation 326 IAC 2-5.5-4(a)(3).

Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following:

(a) Opacity shall not exceed an average of forty 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 (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 continuos opacity monitor in a six (6) hour period.

Pursuant to 326 IAC 8-3-2 (Cold Cleaner Operations), the owner or operator of a cold cleaner degreaser facility shall:

(a) Equip the cleaner with a cover;

(b) Equip the cleaner with a facility for draining cleaned parts;

(c) Close the degreaser cover whenever parts are not being handled in the cleaner;

(d) Drain cleaned parts for at least fifteen (15) seconds or until dripping ceases;

(e) Provide a permanent, conspicuous label summarizing the operation requirements;

(f) Store waste solvent only in covered containers and not dispose of waste solvent or transfer it to another party, in such a manner that greater than twenty percent (20%) of the waste solvent (by weight) can evaporate into the atmosphere.

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

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

(1) 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));

(2) The solvent is agitated; or

(3) The solvent is heated.

(b) 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.

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

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

(e) 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)):

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

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

(3) 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.

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

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

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

(c) 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.

326 IAC 6-3-2 (Process Operations)
326 IAC 6-3-2 (Process Operations)
Interpolation of the data for all PM emitting units (EU1, EU2, EU3, EU4, EU10, EU11, EU12, EU13, and EU14) shall be accomplished by use of the equation for the process weight rate up to sixty thousand (60,000) pounds per hour:

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

PM emissions shall not exceed 0.5837 pounds per hour for EU10, and filter baghouse DC4 shall be in operation any time that EU10 is in operation in order to comply with this limit. PM emissions shall not exceed 1.441 pounds per hour for EU11, and filter baghouse DC5 shall be in operation any time that EU11 is in operation in order to comply with this limit. PM emissions shall not exceed 0.5837 pounds per hour for EU12, and filter baghouse DC6 shall be in operation any time that EU12 is in operation in order to comply with this limit. PM emissions shall not exceed 0.5837 pounds per hour for EU13, and filter baghouse DC7 shall be in operation any time that EU13 is in operation in order to comply with this limit. PM emissions shall not exceed 1.6347 pounds per hour for EU14, and filter baghouse DC8 shall be in operation any time that EU14 is in operation in order to comply with this limit. For detailed calculations, see appendix A page 11.

Pursuant to 326 IAC 1-2-59, process weight does not include liquid or gaseous fuels, therefore 326 IAC 6-3-2 does not apply to EU15.

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

and

Environmental Resources Management Division
Air Quality Management Section, Compliance Data Group
2700 South Belmont Avenue
Indianapolis, Indiana 46221-2097

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 City of Indianapolis Environmental Resources Management Division (ERMD) and Office of Air Management (OAM) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Mona A. Salem, Chief Operating Officer
Department of Public Works
City of Indianapolis

DRA

cc: cc: file (2 copies)
Mindy Hahn, IDEM

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:	**International Aerospace Tubes, LLC**
Address:	**4760 Kentucky Avenue**
City:	**Indianapolis**
Authorized individual:	**General Manager**
Phone #:	**860-513-7620**
Registration #:	**097-12857-00013**

I hereby certify that International Aerospace Tubes, LLC is still in operation and is in compliance with the requirements of Registration 097-12857-00013.

Name (typed):	
Title:	
Signature:	
Date:	

Indiana Department of Environmental Management
Office of Air Management
and
City of Indianapolis
Indianapolis Environmental Resources Management Division

Technical Support Document (TSD) for a New Source Construction and Registration

Source Background and Description

Source Name: International Aerospace Tubes, LLC
Source Location: 4760 Kentucky Avenue
Indianapolis, Indiana 46221
County: Marion
SIC Code: 3498
Operation Permit No.: 097-12857-00013
Permit Reviewer: Dana Armstrong

The City of Indianapolis Environmental Resources Management Division (ERMD) has reviewed an application from International Aerospace Tubes, LLC relating to the construction and operation of manufacturer of repair steel tubing and fabricated pipes for the aerospace industry.

Permitted Emission Units and Pollution Control Equipment

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

(a) Four (4) Plasma Spray Booths, identified as EU1, EU2, EU3, and EU4, with a combined maximum capacity to use approximately 3.9 tons of powder per year. EU1 uses DC1 as control equipment, EU2 and EU3 use DC2 as control equipment, and EU4 uses DC3 as control equipment. EU1 exhausts to S-1, EU2 and EU3 exhaust to S2, and EU3 exhausts to S3.

(b) Two (2) Acid Cleaning Lines, identified as EU5 and EU6 , consisting of several tanks, each with a maximum capacity of 300 gallons, using no control equipment. EU5 Vents to V-1 and EU6 vents to V-2. These tanks will use Nitric Acid (no more than 45% by volume), potassium permanganate, Vitroklene (sodium hydroxide), and rinse water to clean titanium and stainless steel parts.

(c) Three (3) Wash Lines, identified as EU7, EU8, and EU9, consisting of several tanks, most tanks having a capacity of 350 gallons, using no control equipment. EU7 vents to V-3, EU8 vents to V-4, and EU9 vents to V-5. These tanks will use mineral spirits, Vitroklene (sodium hydroxide), Jettacin, and rinse water to remove heavy oil from metal parts.

(d) Glass Bead Blast Cabinet, identified as EU10, with a maximum capacity of 109 lbs/hr, using DC4 as control equipment, and venting inside the building.

(e) Glass Bead Blast Cabinet, identified as EU11, with a maximum capacity of 420 lbs/hr, using DC5 as control equipment, and venting inside the building.

(f) Silicon Dioxide Blast Cabinet, identified as EU12, with a maximum capacity of 109 lbs/hr, using DC6 as control equipment, and venting inside the building.

(g) Silicon Carbide Blast Cabinet, identified as EU13, with a maximum capacity of 109 lbs/hr, using DC7 as control equipment, and venting inside the building.

(h) Aluminum Oxide Blast Cabinet, identified as EU14, with a maximum capacity of 507 lbs/hr, using DC5 as control equipment, and venting inside the building.

(i) Nineteen (19) gas fired combustion units, identified as EU15, with a combined capacity of 4,601,194.5 Btu/hr (4.6 mmBtu/hr), using no controls and venting inside the building.

(j) Small drum mounted parts washing machine, identified as Parts Washer, with a capacity of 30 gallons, with no controls and venting inside the building.

(k) Various welding operations, including semi-automatic TIG welders, TIG line welders, and TIG welding stations. Annual maximum capacity will be approximately 75 pounds of wire consumed.

(l) Various electric heat treating furnaces and drying ovens

(m) Alloying process which involves the use of a syringe type device that places a small bead of brazing compound onto small metal parts. These parts are then placed in electric heat treating furnaces to complete the alloying process.

(n) Alodine treatment process which applies a protective chromate conversion on aluminum parts. A chromic acid tank is used as part of the alodining process.

(o) Anti gall coatings will be applied to the threads of end fittings.

(p) Acetone cleaning will be used in various hand wiping applications at the facility.

(q) Non destructive testing of parts for cracks and other defects.

Unpermitted Emission Units and Pollution Control Equipment

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

Existing Approvals

There are no existing permits for this source.

Air Pollution Control Justification as an Integral Part of the Process

The company has submitted the following justification such that the filter baghouses (DC4, DC 5, DC6, DC7, and DC8) for the following blasting cabinets; EU10, EU11, EU12, EU13, and EU14, be considered as an integral part of the abrasive blasting operations.

The source has stated that recovery of the abrasive media is more economical than replacing it with new abrasive media and that this demonstrates that the control equipment has an overwhelming positive net economic effect, making it integral or inherent to the physical or operational design of the facility. The abrasive blast media is recycled through the blaster an average of four times before it has to be removed. This results in an overall annual cost savings of approximately $33,446 annually. In addition, re-use of the abrasive significantly reduces disposal expense. See the calculations on page 11 on Appendix A.

IDEM, OAM and ERMD have evaluated the justifications and agreed that the collection and control equipment will be considered as an integral part of the blasting operations. Therefore, the permitting level will be determined using the potential to emit after the collection and control equipment. Operating conditions in the proposed permit will specify that this collection and control equipment shall operate at all times when the blasting units are in operation.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{0}F)
S1	EU1	16	1.5	5,000	70
S2	EU2, EU3	16	1.5	11,500	70
S3	EU4	16	1.5	12,000	70
V1	EU5	16	2.2	10,000	70
V2	EU6	16	1.5	10,000	70
V3	EU7	16	1.5	10,000	70
V4	EU8	16	1.5	10,000	70
V5	EU9	16	1.5	10,000	70

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Administrator 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 10/18/00, with additional information received on 11/6/00 and 11/10/00.

Emission Calculations

See 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	8.22
PM-10	8.22
SO_2	0.01

VOC	3.93
CO	1.69
NO_x	3.55

HAP's	Potential To Emit (tons/year)
Chromium	0.89
Nickel	0.81
Cobalt	0.79
TOTAL	2.51

Actual Emissions

No previous emission data has been received from the source.

County Attainment Status

The source is located in Marion County.

Pollutant	Status **(attainment, maintenance attainment or unclassifiable; severe, moderate, marginal, or nonattainment*)***
PM-10	unclassifiable
SO_2	maintenance attainment
NO_2	attainment
Ozone	maintenance attainment
CO	attainment
Lead	unclassifiable

(a) Volatile organic compounds (VOC) and oxides of nitrogen (NOx) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Marion 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 and 40 CFR 52.21.

(b) Marion County has been classified as attainment or unclassifiable for PM-10, SO2, CO, and Lead. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

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

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

This is the first air approval issued to this source.

Federal Rule Applicability

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

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(b) Pursuant to 40 CFR 63.741(a), 40 CFR 63 Subpart GG does not apply to this source since it is not a major source pursuant to the definition of “major source”, given in 40 CFR 63.2. None of the solvents used by the wash lines or the parts washer permitted by this registration contain any of the constituents listed in 40 CFR 63.460(a), therefore 40 CFR Subpart T does not apply. There are no other National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR art 63) applicable to this source.

State Rule Applicability - Entire Source

326 IAC 2-5.1-2 (Registrations)
Since the source wide emissions for PM are greater than 5 tons per year but less than 25 tons per year for this new source, section 326 IAC 2-5.1 applies to this source, and it will be a registration.

326 IAC 2-5.5-4(Registration Content)
Pursuant to IAPCB Regulation 2 (Permits) and 326 IAC 2-5.5-4 (Registration Content) An authorized individual shall provide an annual notice to the Environmental Resources Management Division and the Office of Air Management that the source is in operation and in compliance with this registration pursuant to state regulation 326 IAC 2-5.5-4(a)(3).

326 IAC 2-6 (Emission Reporting)
This source is located in Marion County, the potential to emit VOC and NO_x is less than ten (10) tons per year and its potential to emit PM is less than one-hundred (100) tons per year including fugitive emissions, therefore, 326 IAC 2-6 does not apply.

326 IAC (Opacity Limitations)
The Opacity regulation 326 IAC 5-1 is generally applicable to all point sources of emissions. Since the source is located in Marion County, and is not located in the areas of Marion County referred to in 326 IAC 5-1-5, pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of forty percent (30%) 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 6-1 (Non Attainment Area Limitations)
Since the source does not have the potential to emit greater than 100 tons per year of particulate matter, or actual emissions of greater than 10 tons per year of particulate matter, and it is not one of the sources listed in 326 IAC 6-1-12, 326 IAC 6-1 does not apply.

State Rule Applicability - Individual Facilities

326 IAC 2-4.1 (New Source Toxics Control)
The source is not subject to 326 IAC 2-4.1 since it is not a major source of HAPs as defined by 40 CFR 63.41.

326 IAC 8-2 (VOC Rules)
The four Plasma Spray Booths (EU1, EU2, EU3, and EU4) are not subject to this rule since they do not use or emit any VOCs.

326 IAC 8-3-2 (Cold cleaner operation)

The organic solvent cold cleaner operation regulation applies to the The Wash Lines (EU7, EU8, and EU9), and small drum mounted parts washing machine identified as the Parts Washer.

326 IAC 8-3-5 (Cold cleaner degreaser operation and control)

The organic solvent cold cleaner degreaser operation and control regulation applies to the The Wash Lines (EU7, EU8, and EU9), and small drum mounted parts washing machine identified as the Parts Washer.

326 IAC 6-3-2 (Process Operations)

Interpolation of the data for all PM emitting units (EU1, EU2, EU3, EU4, EU10, EU11, EU12, EU13, and EU14) shall be accomplished by use of the equation for the process weight rate up to sixty thousand (60,000) pounds per hour:

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

PM emissions shall not exceed 0.5837 pounds per hour for EU10, and filter baghouse DC4 shall be in operation any time that EU10 is in operation in order to comply with this limit. PM emissions shall not exceed 1.441 pounds per hour for EU11, and filter baghouse DC5 shall be in operation any time that EU11 is in operation in order to comply with this limit. PM emissions shall not exceed 0.5837 pounds per hour for EU12, and filter baghouse DC6 shall be in operation any time that EU12 is in operation in order to comply with this limit. PM emissions shall not exceed 0.5837 pounds per hour for EU13, and filter baghouse DC7 shall be in operation any time that EU13 is in operation in order to comply with this limit. PM emissions shall not exceed 1.6347 pounds per hour for EU14, and filter baghouse DC8 shall be in operation any time that EU14 is in operation in order to comply with this limit. For detailed calculations, see appendix A page 11.

Pursuant to 326 IAC 1-2-59, process weight does not include liquid or gaseous fuels, therefore 326 IAC 6-3-2 does not apply to EU15.

Conclusion

The construction and operation of this manufacturer of repair steel tubing and fabricated pipes for the aerospace industry shall be subject to the conditions of the attached proposed New Source Construction and Registration 097-12857-00013.

Appendix A: Emission Calculations
Equipment Descriptions

Company Name: International Aerospace Tubes
Address City IN Zip: 46221
CP: 097-12857-00013
Plt ID: 00013
Reviewer: DRA
Date: 05-Dec-00

Emission Unit ID	Vent Stack ID	Control Equipment ID	Description
EU1	S1	DC1	Plasma Spray Booth #1
EU2	S2	DC2	Plasma Spray Booth #2
EU3	S2	DC2	Plasma Spray Booth #3
EU4	S3	DC3	Plasma Spray Booth #4
EU5	V1	N/A	Acid Cleaning Line #1
EU6	V2	N/A	Acid Cleaning Line #2
EU7	V3	N/A	Wash Line #1
EU8	V4	N/A	Wash Line #2
EU9	V5	N/A	Wash Line #3
EU10	N/A	DC4	Glass Bead Blast Cabinet #1
EU11	N/A	DC5	Glass Bead Blast Cabinet #2
EU12	N/A	DC6	Silicon Dioxide Blast Cabinet
EU13	N/A	DC7	Silicon Carbide Blast Cabinet
EU14	N/A	DC8	Aluminum Oxide Blast Cabinet
EU15	N/A	N/A	Maintenance Parts Washer
EU16	N/A	N/A	Natural Gas Fired Combustion

Metal Powder Name	Monthly Usage(lbs/month)
Ni-109	10
CRC-106	45
CO-103	60
WC-106	40
42C	20
CO-211	20
ZRO-103	30
204B-NS	230
CO-159	100
NI-109b	15
204NS	80
Total	**650**

lbs per month — 7800 lbs/year — 3.9 tons/year

*MSDS were not provided for these products
**This product is counted twice on the table

Appendix A: Emission Calculations
Plasma Spray Booths

Company Name: International Aerospace Tubes
Address City IN Zip: 46221
CP: 097-12857-00013
Plt ID: 00013
Reviewer: DRA
Date: 05-Dec-00

Dust Collected/Year	5700	(Actual 4,750 + 20% from new paint booth)
Baghouse Control	99.00%	
Baghouse Capture	100.00%	
Actual PM Emission	5757.575758	Amount Captured and Controlled/[(%Capture)*(%Control)]
Hours Operation/Year	4000	
Potential Hours/Year	8760	
PTE PM	12609.09091	(Potential Hours/Actual Hours)*Actual PM
PTE PM TPY	6.304545455	

Product	**Percent Usage**	**Cobalt**	**Chromium**	**Nickel**
CO-211	3.08%	33.30%	33.30%	33.30%
CRC-106	6.92%	0.00%	62.50%	35.00%
CO-103	9.23%	62.50%	35.00%	12.50%
WC-106	6.15%	12.50%	0.00%	0.00%
42C	3.08%	0.00%	16.00%	2.00%
Ni-109	1.54%	0%	0%	91%
*CO-159	15.38%	33%	33%	33%
*NI-109b	2.31%	0%	0%	75%

Product		**Cobalt**	**Chromium**	**Nickel**	**Total**
CO-211		129.1946853	129.1946853	129.1946853	387.5841
CRC-106		0	545.5856643	305.527972	851.1136
CO-103		727.4475524	407.3706294	145.4895105	1280.308
WC-106		96.99300699	0	0	96.99301
42C		0	62.07552448	7.759440559	69.83497
Ni-109		0	0	176.5272727	176.5273
*CO-159		645.9734266	645.9734266	645.9734266	1937.92
*NI-109b		0	0	218.2342657	218.2343
	Total Individual HAPs	1599.608671	1790.19993	1628.706573	
	Tons Per Year	0.799804336	0.895099965	0.814353287	
				Total Combined HAPs	5018.515
				Tons Per Year	2.509258

Appendix A: Emission Calculations
Acid Wash Tanks

Company Name:	International Aerospace Tubes
Address City IN Zip:	46221
CP:	097-12857-00013
Plt ID:	00013
Reviewer:	DRA
Date:	05-Dec-00

Given:
Nitric acid reacts with metal and releases NO2 at a one to one molar basis

1 mole of nitric is	63	grams	
1 mole of nitrite is	46	grams	
mass HNO3/mass NO2 is	0.730159		
Amount of Nitric Used	500	gal/yr	
Percent Concentration	72%		
Density of Acid	11.7	lbs/gal	
lbs of HNO3	4212	lbs/yr	
lbs of NO2	3075.429	lbs/yr	
TPY	1.537714	tons/yr	NO2

Appendix A: Emission Calculations
Wash Lines

Company Name:	International Aerospace Tubes
Address City IN Zip:	46221
CP:	097-12857-00013
Plt ID:	00013
Reviewer:	DRA
Date:	05-Dec-00

Given:

Amount of Solvent Used Per Year	1000	gal/yr
Amount of Solvent Reclaimed Per Year	700	gal/yr
Amount of Solvent Consumed Per Year	300	gal/yr
Density of Solvent	6.54	lbs/gal
% of solvent VOC	100%	
lbs of VOC	1962	lbs/yr
Hours of operation per year	2250	hr/yr
Maximum hours of operation	8760	hr/yr
Potential VOC emissions	7638.72	lbs/yr
Tons Per Year VOC emissions	3.81936	tons/yr

Appendix A: Emission Calculations
Abrasive Blasting

Company Name: International Aerospace Tubes
Address City IN Zip: 46221
CP: 097-12857-00013
Plt ID: 00013
Reviewer: DRA
Date: 05-Dec-00

Table 1 - Emission Factors for Abrasives

	Emission Factor	
Abrasive	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
Glass Beads	**99**

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

	Nozzle Pressure (psig)							
Internal diameter, in	**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 =	109
D = Density of abrasive (lb/ft3) From Table 2 =	99
D1 = Density of sand (lb/ft3) =	99
ID = Actual nozzle internal diameter (in) =	0.25
ID1 = Nozzle internal diameter (in) from Table 3 =	0.25

Flow Rate (FR) (lb/hr) = **109.000** per nozzle

Uncontrolled Emissions (E, lb/hr)

EF = emission factor (lb PM/ lb abrasive) From Table 1 =	0.010
FR = Flow Rate (lb/hr) =	109.000
w = fraction of time of wet blasting =	0 %
N = number of nozzles =	1

Uncontrolled Emissions =	**1.09 lb/hr**
	4.77 ton/yr

Control Efficiency	**98%**	
Controlled Emissions	**0.095484**	tons/yr

METHODOLOGY

Emission Factors from Stappa Alapco, Section 3 "Abrasive Blasting"
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)
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)

Appendix A: Emission Calculations

Abrasive Blasting

Company Name: International Aerospace Tubes
Address City IN Zip: 46221
CP: 097-12857-00013
Plt ID: 00013
Reviewer: DRA
Date: 05-Dec-00

Table 1 - Emission Factors for Abrasives

	Emission Factor	
Abrasive	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
Glass Beads	**99**

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

	Nozzle Pressure (psig)							
Internal diameter, in	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 =	420
D = Density of abrasive (lb/ft3) From Table 2 =	99
D1 = Density of sand (lb/ft3) =	99
ID = Actual nozzle internal diameter (in) =	0.3125
ID1 = Nozzle internal diameter (in) from Table 3 =	0.3125

Flow Rate (FR) (lb/hr) = **420.000** per nozzle

Uncontrolled Emissions (E, lb/hr)

EF = emission factor (lb PM/ lb abrasive) From Table 1 =	0.010
FR = Flow Rate (lb/hr) =	420.000
w = fraction of time of wet blasting =	0 %
N = number of nozzles =	1

Uncontrolled Emissions =	**4.20**	**lb/hr**
	18.40	**ton/yr**

Control Efficiency	**98%**	
Controlled Emissions	**0.36792**	tons/yr

METHODOLOGY

Emission Factors from Stappa Alapco, Section 3 "Abrasive Blasting"
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)
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)

Appendix A: Emission Calculations
Abrasive Blasting

Company Name: International Aerospace Tubes
Address City IN Zip: 46221
CP: 097-12857-00013
Plt ID: 00013
Reviewer: DRA
Date: 05-Dec-00

Table 1 - Emission Factors for Abrasives

	Emission Factor	
Abrasive	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
Glass Beads	**99**

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

	Nozzle Pressure (psig)							
Internal diameter, in	**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
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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 = 109
D = Density of abrasive (lb/ft3) From Table 2 = 99
D1 = Density of sand (lb/ft3) = 99
ID = Actual nozzle internal diameter (in) = 0.25
ID1 = Nozzle internal diameter (in) from Table 3 = 0.25

Flow Rate (FR) (lb/hr) = **109.000** per nozzle

Uncontrolled Emissions (E, lb/hr)

EF = emission factor (lb PM/ lb abrasive) From Table 1 = 0.010
FR = Flow Rate (lb/hr) = 109.000
w = fraction of time of wet blasting = 0 %
N = number of nozzles = 1

Uncontrolled Emissions =	**1.09 lb/hr**
	4.77 ton/yr

Control Efficiency	**98%**	
Controlled Emissions	**0.095484**	tons/yr

METHODOLOGY

Emission Factors from Stappa Alapco, Section 3 "Abrasive Blasting"
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)
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)

Appendix A: Emission Calculations
Abrasive Blasting

Company Name: International Aerospace Tubes
Address City IN Zip: 46221
CP: 097-12857-00013
Plt ID: 00013
Reviewer: DRA
Date: 05-Dec-00

Table 1 - Emission Factors for Abrasives

	Emission Factor	
Abrasive	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
Aluminum Oxide	**246.875**

3.95 SG Aluminum oxide media
62.5 lbs/ft^3 H20
246.875 lbs/ft^3 Aluminum Oxide Media

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

	Nozzle Pressure (psig)							
Internal diameter, in	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 =	507
D = Density of abrasive (lb/ft3) From Table 2 =	246.875
D1 = Density of sand (lb/ft3) =	99
ID = Actual nozzle internal diameter (in) =	0.3125
ID1 = Nozzle internal diameter (in) from Table 3 =	0.3125

Flow Rate (FR) (lb/hr) = **1264.299** per nozzle

Uncontrolled Emissions (E, lb/hr)

EF = emission factor (lb PM/ lb abrasive) From Table 1 =	0.010
FR = Flow Rate (lb/hr) =	1264.299
w = fraction of time of wet blasting =	0 %
N = number of nozzles =	1

Uncontrolled Emissions =	**12.64 lb/hr**
	55.38 ton/yr

Control Efficiency	**98%**	
Controlled Emissions	**1.107526136**	tons/yr

METHODOLOGY

Emission Factors from Stappa Alapco, Section 3 "Abrasive Blasting"
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)
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)

Appendix A: Emission Calculations
Heating Units

Company Name: International Aerospace Tubes
Address City IN Zip: 46221
CP: 097-12857-00013
Plt ID: 00013
Reviewer: DRA
Date: 05-Dec-00

Natural Gas Combustion Potential Emissions
Comfort Heating Units

Pollutant	emfac
PM	7.6
SO2	0.6
NO x	100
VOC	5.5
CO	84
Heat Input Capacity	4.601
Throughput	40.30476

PM	SO2	NO x	VOC	CO	
306.3162	24.182856	4030.476	221.6762	3385.6	lbs/yr
0.153158	0.012091428	2.015238	0.110838	1.6928	tons/yr

Appendix A: Emission Calculations
Summary

Company Name: International Aerospace Tubes
Address City IN Zip: 46221
CP: 097-12857-00013
Plt ID: 00013
Reviewer: DRA
Date: 05-Dec-00

	PM	SO2	NO x	VOC	CO	Individual HAPs	Combined HAPs
EU1-4	6.304545					0.7998043	2.5092576
EU5,6			1.537714				
EU7-9				3.81936			
EU10	0.095484						
EU11	0.36792						
EU12	0.095484						
EU13	0.095484						
EU14	1.107526						
Boilers	0.153158	0.012091	2.015238	0.11083809	1.6928		
Totals	**8.22**	**0.01**	**3.55**	**3.93**	**1.69**	**0.80**	**2.51**

Cost savings from recycling blast media:

Blast media	price per pound	pounds /month	price per year	X4 if not recycled
Grit Blast Bead	0.47	190	1071.6	4286.4
Aluminum Oxide	0.47	250	1410	5640
Silicon Carbide	1.75	280	5880	23520
		Total	8361.6	33446.4

Process Weight Emission Calculations

(P Below 100 pounds/hr=.551 pursuant to table 326 IAC 6-3-2©

	P=	Pt=	E=	EU1, EU2, EU3, EU4
EU10	109	0.0545	0.583673	E= 0.551
EU11	420	0.21	1.441023	
EU12	109	0.0545	0.583673	
EU13	109	0.0545	0.583673	
EU14	507	0.2535	1.634742	