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

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Indianapolis, Indiana 46204
(317) 232-8603
(800) 451-6027
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February 25, 2005

Mr. Nick Knable
Samtec, Inc.
520 Park East Blvd
New Albany, Indiana 47150

Re: Registered Construction and Operation Status,
043-20264-00059

Dear Mr. Knable:

The application from Samtec, Inc., received on October 15, 2004, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.1, it has been determined that the following electronic components electroplating and assembly source, to be located at 520 Park East Blvd, New Albany, Indiana, is classified as registered:

(a) Eight (8) natural gas fired heaters, identified as A1 - A8, installed in 1998, exhausting to stacks A1 - A8, respectively, rated at 0.470 million British thermal units per hour, each.

(b) One (1) natural gas fired heater, identified as B1, installed in 1998, exhausting to stack B1, rated at 0.400 million British thermal units per hour.

(c) Twenty eight (28) natural gas fired heaters, identified as C1 - C28, installed in 1998, exhausting to stacks C1 - C28, respectively, rated at 0.260 million British thermal units per hour, each.

(d) One (1) natural gas fired heater, identified as D1, installed in 1998, exhausting to stack D1, rated at 0.235 million British thermal units per hour.

(e) Four (4) natural gas fired heaters, identified as E1 - E4, installed in 1998, exhausting to stacks E1 - E4, respectively, rated at 0.201 million British thermal units per hour, each.

(f) One (1) natural gas fired heater, identified as F1, installed in 1998, exhausting to stack F1, rated at 0.200 million British thermal units per hour.

(g) One (1) natural gas fired heater, identified as G1, installed in 1998, exhausting to stack G1, rated at 0.180 million British thermal units per hour.

(h) Two (2) natural gas fired heaters, identified as H1 and H2, installed in 1998, exhausting to stacks H1 and H2, respectively, rated at 0.130 million British thermal units per hour, each.

(i) Four (4) natural gas fired heaters, identified as I1 - I4, installed in 1998, exhausting to stacks I1 - I4, respectively, rated at 0.125 million British thermal units per hour, each.

(j) Five (5) natural gas fired heaters, identified as J1 - J5, installed in 1998, exhausting to stacks J1 - J5, respectively, rated at 0.120 million British thermal units per hour, each.

(k) One (1) natural gas fired heater, identified K1, installed in 1998, exhausting to stack K1, rated at 0.090 million British thermal units per hour.

(l) Four (4) natural gas fired heaters, identified as L1 - L4, installed in 1998, exhausting to stacks L1 - L4, respectively, rated at 0.078 million British thermal units per hour, each.

(m) One (1) natural gas fired heater, identified as M1, installed in 1998, exhausting to stack M1, rated at 0.075 million British thermal units per hour.

(n) One (1) propane fired internal combustion engine, identified as PE61, installed in 1998, exhausting to stack EU45, rated at 60.4 horsepower.

(o) Two (2) woodworking operations, identified as PE26 and PE27, installed in 2002, equipped with a baghouse (CE5), exhausting to stack EU7, capacity: 11.1 pounds of wood per hour, total.

(p) One (1) Direct Metal Metalization Line, identified as PE19, used to chemically bond Palladium to flex circuit, installed in 2002, equipped with a scrubber (CE1), exhausting to stack EU1, capacity: 15 panels per hour or 3.36 pounds per hour.

(q) One (1) Develop/Etch/Strip Line, identified as PE22, using a cupric chloride chemistry, installed in 2002, equipped with a scrubber (CE1), exhausting to stack EU1, capacity: 100 panels per hour or 224 pounds per hour.

(r) One (1) Hot Air Solder Leveler, identified as PE30, installed in 2003, equipped with an electrostatic precipitator (CE2), exhausting to stack EU3, capacity: 30 panels per hour or 6.72 pounds per hour.

(s) One (1) Chem Clean Line, identified as PE21, using potassium per sulfate microetch and sulfuric acid for cleaning parts, installed in 2002, equipped with a scrubber (CE1), exhausting to stack EU1, capacity: 100 panels per hour or 224 pounds per hour.

(t) Two (2) Barrel Plating Lines, identified as PE1 and PE2, used to plate nickel, tin, copper, or gold, installed in 1998, equipped with a scrubber (CE9), exhausting to stack EU21, capacity: 5.00 pounds per hour, each.

(u) Four (4) Strip Plating Lines, identified as PE3 - PE6, used to plate nickel, tin, copper, or gold, installed in 1998, equipped with a scrubber (CE10), exhausting to stack EU22, capacity: 31.5 pounds per hour, each.

(v) Four (4) Strip Plating Lines, identified as PE7 - PE10, used to plate nickel, tin, copper, or gold, installed in 1998, equipped with a scrubber (CE9), exhausting to stack EU21, capacity: 31.5 pounds per hour, each.

(w) Four (4) Strip Plating Lines, identified as PE11 and PE13 - PE15, used to plate nickel, tin, copper, or gold, installed in 1998 and 2000, respectively, equipped with scrubbers (CE7 and CE8), exhausting to stacks EU16 and EU17, capacity: 31.5 pounds per hour, each.

(x) One (1) Strip Plating Line, identified as PE12, used to plate nickel, tin, copper, or gold, installed in 1998, equipped with scrubbers (CE8 and CE9), exhausting to stacks EU17 and EU21, capacity: 31.5 pounds per hour.

(y) Three (3) Strip Plating Lines, identified as PE16, PE17, and PE18, used to plate nickel, tin, copper, or gold, installed in 2000, equipped with scrubbers (CE3 and CE4), exhausting to stacks EU5 and EU6, capacity: 31.5 pounds per hour, each.

(z) One (1) Flex Plating Line, identified as PE20, used to plate nickel, tin, copper, or gold, installed in 2002, equipped with a scrubber (CE1), exhausting to stack EU1, capacity: 12 panels or 2.69 pounds per hour.

(aa) Two (2) natural gas fired heaters, identified as A9 and A10, to be installed in 2005, exhausting to stacks A9 and A10, respectively, rated at 0.470 million British thermal units per hour, each.

(bb) Four (4) Strip Plating Lines, identified as PE62 - PE65, used to plate nickel, tin, copper, or gold, to be installed in 2005, equipped with scrubbers (CE13 and CE14), exhausting to stacks EU54 and EU55, capacity: 31.5 pounds per hour, each.

The following conditions shall be applicable:

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

(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor in a six (6) hour period.

(2) Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from the one (1) Chem Clean Line and the one (1) Develop/Etch/Strip Line, identified as PE21 and PE22, respectively, shall not exceed 0.946 pounds per hour, each, when operating at a process weight rate of 0.112 tons per hour, each.

The allowable particulate emission rates from the one (1) Chem Clean Line and the one (1) Develop/Etch/Strip Line, identified as PE21 and PE22, respectively, were calculated by 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:

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

This registration is the first air 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 Office of Air Quality that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.5-4(a)(3)). The annual notice shall be submitted to:

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

no later than March 1 of each year, with the annual notice being submitted in the format attached.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Original Signed by

Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

BJP/MES

cc: File - Floyd County
Floyd County Health Department
Air Compliance – Ray Schick
Permit Tracking
Compliance Data Section
Administration and Development Section

Registration
Annual Notification

This form should be used to comply with the notification requirements under 326 IAC 2-5.5-4(a)(3)

Company Name:	**Samtec, Inc.**
Address:	**520 Park East Blvd.**
City:	**New Albany**
Authorized individual:	
Phone #:	
Registration #:	**043-20264-00059**

I hereby certify that Samtec, Inc. is still in operation and is in compliance with the requirements of Registration 043-20264-00059.

Name (typed):
Title:
Signature:
Date:

ELECTROPLATING PROCESS
Acid Activator

Process Data

Process:	Acid Activator
Estimation Method:	Emission Factor
Maximum Process Throughput:	
Sulfuric Acid =	4 gallons per week on a stripping line
	3.9 gallons wasted per week on a stripping line
	3 gallons per week on a barrel line
	2.9 gallons wasted per week on a barrel line
Source of Emissions:	USEPA AP-42
Pollutants Generated By Process:	SOx
Pollution Control Equipment:	Wet Scrubber
Control Efficiency:	99 percent capture efficiency for particulate
	98 percent control efficiency for particulate
	20 percent control efficiency for sulfur oxides

Potential Criteria Emissions Estimates Before Controls

Acid Activator

Quantity of SOx emitted = (Maximum Process Throughput)(Emission Factor)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(52 weeks/year)
(1 ton/2,000 pounds) – (Minimum Process Wasted)(Emission Factor)
(Specific Gravity)(Number of stripping lines)(8.34 pounds/gallon)
(52 weeks/year)(1 ton/2,000 pounds)+ (Maximum Process Throughput)
(Emission Factor)(Specific Gravity)(Number of barrel lines)
(8.34 pounds/gallon)(52 weeks/year)(1 ton/2,000 pounds) –
(Minimum Process Wasted)(Emission Factor)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(52 weeks/year)
(1 ton/2,000 pounds)

Quantity of SOx emitted = (4 gal/wk)(0.10 lb/ton)(1.84)(9 stripping lines)(8.34 lb/gal)(52 wk/yr)
(1 ton/2,000 lb)(1 ton/2,000 lb) - (3.9 gal/wk)(0.10 lb/ton)(1.84)
(9 stripping lines)(8.34 lb/gal)(52 wk/yr)(1 ton/2,000 lb)(1 ton/2,000 lb)
+ (3 gal/wk)(0.10 lb/ton)(1.84)(2 barrel lines)(8.34 lb/gal)(52 wk/yr)
(1 ton/2,000 lb)(1 ton/2,000) - (2.9 gal/wk)(0.10 lb/ton)(1.84)
(2 barrel lines)(8.34 lb/gal)(52 wk/yr)(1 ton/2,000 lb)(1 ton/2,000 lb)
= 0.000025 tons/year

Potential Criteria Emissions Estimates After Controls

Acid Activator

Quantity of SOx emitted = [(Maximum Process Throughput)(Emission Factor)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(52 weeks/year)
(1 ton/2,000 pounds) – (Minimum Process Wasted)(Emission Factor)
(Specific Gravity)(Number of stripping lines)(8.34 pounds/gallon)
(52 weeks/year)(1 ton/2,000 pounds)+ (Maximum Process Throughput)
(Emission Factor)(Specific Gravity)(Number of barrel lines)
(8.34 pounds/gallon)(52 weeks/year)(1 ton/2,000 pounds) –
(Minimum Process Wasted)(Emission Factor)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(52 weeks/year)
(1 ton/2,000 pounds))](1- (capture efficiency)(control efficiency))

Quantity of SOx emitted = [(4 gal/wk)(0.10)(1.84)(9 stripping lines)(8.34 lb/gal)(52 wk/yr)
(1 ton/2,000 lb)(1 ton/2,000 lb)- (3.9 gal/wk)(0.10)(1.84)(9 stripping lines)
(8.34 lb/gal)(52 wk/yr)(1 ton/2,000 lb)(1 ton/2,000 lb)+ (3 gal/wk)(0.10)(1.84)
(2 barrel lines)(8.34 lb/gal)(52 wk/yr)(1 ton/2,000 lb)(1 ton/2,000 lb)
-(2.9 gal/wk)(0.10)(1.84)(2 barrel lines)(8.34 lb/gal)(52 wk/yr)(1 ton/2,000 lb)
(1 ton/2,000 lb)] (1.0- (0.99*0.20))
= 0.00002 tons/year

ELECTROPLATING PROCESS
Alkaline Cleaner

Process Data

Process:	Alkaline Cleaner
Estimation Method:	Mass Balance
Maximum Process Throughput:	
Sodium Hydroxide Solution =	40 gallons per week on a stripping line
	30 gallons per week on a barrel line
Source of Emissions:	Mass Balance
Pollutants Generated By Process:	None
Pollution Control Equipment:	Wet Scrubber
Control Efficiency:	99 percent capture efficiency for particulate
	98 percent control efficiency for particulate
	20 percent control efficiency for sulfur oxides

According to the MSDS provided by Samtec, the alkaline cleaner does not contain volatiles, sulfur oxides, and nitrous oxides. The alkaline cleaner is comprised entirely of aqueous solution and therefore will not generate particulate emissions.

ELECTROPLATING PROCESS
Copper Sulfate

Process Data

Process:	Copper Sulfate
Estimation Method:	Emission Factors and Mass Balance
Maximum Process Throughput:	
	40 gallons per year on a stripping line
	80 gallons per year on a barrel line
Copper Sulfate =	12 ounces per gallon
	1 gallon per week
Copper Gleam PCM =	0.5 percent of mixture
Sulfuric Acid =	25 ounces per gallon
	0.5 gallons per week
Chloride =	75 parts per million
Copper Nuggets =	25 pounds per week
Copper Application =	0.000015 inch
Source of Emissions:	USEPA AP-42 and Mass Balance
Pollutants Generated By Process:	PM, PM10, SOx and VOCs
Pollution Control Equipment:	Wet Scrubber
Control Efficiency:	99 percent capture efficiency for particulate
	98 percent control efficiency for particulate
	20 percent control efficiency for sulfur oxides

Potential Criteria Emissions Estimates Before Controls

Copper Sulfate

Quantity of SOx emitted = (Maximum Process Throughput)(Percent Sulfate)(Emission Factor)
(Number of stripping lines)(1 pound/16 ounces)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent Sulfate)(Emission Factor)
(Number of barrel lines)(1 pound/16 ounces)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent Sulfate)(Emission Factor)
(1 pound/16 ounces)(52 weeks/year)(1 ton/2,000 pounds)

Quantity of SOx emitted = (12.0 oz/gal)(40 gal/yr)(0.633)(0.10 lb/ton)(9 stripping lines)(1 lb/16 oz)
(1 ton/2,000 lb)(1 ton/2,000 lb)+ (12.0 oz/gal)(80 gal/yr)(0.633)(0.10 lb/ton)
(2 barrel lines)(1 lb/16 oz)(1 ton/2,000 lb)(1 ton/2,000 lb)
+ (1 lb/wk)(0.633)(0.10)(1 lb/16 oz)(52 wk/yr)(1 ton/2,000 lb)(1 ton/2,000 lb)
= 0.000006 tons/year

Copper Gleam PCM

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.005)(40 gal/yr)(0.99)(1.01)(9 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.005)(80 gal/yr)(0.99)(1.01)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 0.011 tons/year

Sulfuric Acid

Quantity of SOx emitted = (Maximum Process Throughput)(Emission Factor)(Number of stripping lines)
(1 pound/16 ounces)(1 ton/2,000 pounds)+ (Maximum Process Throughput)
(Emission Factor)(Number of barrel lines)(1 pound/16 ounces)
(1 ton/2,000 pounds)+ (Maximum Process Throughput)(Emission Factor)
(1 pound/16 ounces)(52 weeks/year)(1 ton/2,000 pounds)

Quantity of SOx emitted = (25.0 oz/gal)(40 gal/yr)(0.10 lb/ton)(9 stripping lines)(1 lb/16 oz)
(1 ton/2,000 lb)(1 ton/2,000 lb)(25.0 oz/gal)(80 gal/yr)(0.10)(2 barrel lines)
(1 lb/16 oz)(1 ton/2,000 lb)(1 ton/2,000 lb) + (0.5 gal/wk)(0.10)(1.84)
(8.34 lb/gal)(52 wk/yr)(1 ton/2,000 lb)(1 ton/2,000 lb)
= 0.000031 tons/year

Copper Chloride

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (75 ppm/1,000,000)(40 gal/yr)(0.41)(4.14)(9 stripping lines)(8.34 lb/gal)
(1 ton/2,000 lb)+ (75 ppm/1,000,000)(80 gal/yr)(0.41)(4.14)(2 barrel lines)
(8.34 lb/gal)(1 ton/2,000 lb)
= 0.00027 tons/year

Copper

Quantity Applied to Pins = (Thickness)(Area of Pin)(Specific Gravity of Copper)
(Number of Pins/Month)(12 months/year)(62.3 pounds/cubic feet)
(1 cubic feet/ 1,728 cubic inches)(1 ton/2,000 pounds)

Quantity Applied to Pins = (0.000015 in/pin)(1.0 in x 0.025 in)(9.00)(583,072,400 pins/month)
(12 months/yr)(62.3 lb/ft^3)(1 ft^3/1,728 in^3)(1 ton/2,000 lb)
= 0.426 tons/year

Quantity Wasted to Landfill = (Amount Collected)(Percent Copper in Waste Stream)(12 months/year)
(1 ton/2,000 lb)

Quantity Wasted to Landfill = (1,200 lb/month)(0.0000348)(12 months/yr)(1 ton/2,000 lb)
= 0.00025 tons/year

Quantity of PM emitted = (Maximum Process Throughput - Quantity Applied to Pins
– Quantity Wasted to Landfill)

Quantity of PM emitted = (25 lb/wk)(52 wk/yr)(1 ton/2,000 lb)- 0.426 tons/year – 0.00025 tons/year
= 0.22 ton/year

Quantity of PM10 emitted = (Maximum Process Throughput - Quantity Applied to Pins
– Quantity Wasted to Landfill)

Quantity of PM10 emitted = (25 lb/wk)(52 wk/yr)(1 ton/2,000 lb)- 0.426 tons/year – 0.00025 tons/year
= 0.22 ton/year

Potential Criteria Emissions Estimates After Controls

Copper Sulfate

Quantity of SOx emitted = [(Maximum Process Throughput)(Percent Sulfate)(Emission Factor)
(Number of stripping lines)(1 pound/16 ounces)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent Sulfate)(Emission Factor)
(Number of barrel lines)(1 pound/16 ounces)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent Sulfate)(Emission Factor)
(1 pound/16 ounces)(52 weeks/year)(1 ton/2,000 pounds)]
(1- (capture efficiency)(control efficiency))

Quantity of SOx emitted = [(12.0 oz/gal)(40 gal/yr)(0.633)(0.10)(9 stripping lines)(1 lb/16 oz)
(1 ton/2,000 lb)(1 ton/2,000 lb)+ (12.0 oz/gal)(80 gal/yr)(0.633)(1.00)
(2 barrel lines)(1 lb/16 oz)(1 ton/2,000 lb)(1 ton/2,000 lb)
+ (1 lb/wk)(0.633)(0.10)(1 lb/16 oz)(52 wk/yr)(1 ton/2,000 lb)(1 ton/2,000 lb)]
(1.0- (0.99*0.20))
= 0.00000048 tons/year

Copper Gleam PCM

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = [(0.005)(40 gal/yr)(0.99)(1.01)(9 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.005)(80 gal/yr)(0.99)(1.01)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)]
(1.0 – (0.99*0.20))
= 0.011 tons/year

Sulfuric Acid

Quantity of SOx emitted = [(Maximum Process Throughput)(Emission Factor)(Number of stripping lines)
(1 pound/16 ounces)(1 ton/2,000 pounds)+ (Maximum Process Throughput)
(Emission Factor)(Number of barrel lines)(1 pound/16 ounces)
(1 ton/2,000 pounds)+ (Maximum Process Throughput)(Emission Factor)
(1 pound/16 ounces)(52 weeks/year)(1 ton/2,000 pounds)]
(1- (capture efficiency)(control efficiency))

Quantity of SOx emitted = [(25.0 oz/gal)(40 gal/yr)(0.10)(9 stripping lines)(1 lb/16 oz)
(1 ton/2,000 lb)(1 ton/2,000 lb)+ (25.0 oz/gal)(80 gal/yr)(0.10)(2 barrel lines)
(1 lb/16 oz)(1 ton/2,000 lb)(1 ton/2,000 lb) + (0.5 gal/wk)(0.10)(1.84)
(8.34 lb/gal)(52 wk/yr)(1 ton/2,000 lb)(1 ton/2,000 lb)](1.0- (0.99*0.20))
= 0.000025 tons/year

Copper Chloride

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (75 ppm/ 1,000,000)(40 gal/yr)(0.41)(4.14)(9 stripping lines)(8.34 lb/gal)
(1 ton/2,000 lb)+ (75 ppm/1,000,000)(80 gal/yr)(0.41)(4.14)(2 barrel lines)
(8.34 lb/gal)(1 ton/2,000 lb)
= 0.00027 tons/year

Copper

Quantity of PM emitted = (Emission Factor)(1 lb/7,000 grains)(1 ton/2,000 lb)(10,000 cfm)
(60 min/hr)(8,760 hr/yr)

Quantity of PM emitted = (0.000081 grains/dscf)(1 lb/7,000 grains)(1 ton/2,000 lb)(10,000 cfm)
(60 min/hr)(8,760 hr/yr)
= 0.03 ton/year

Quantity of PM10 emitted = (Emission Factor)(1 lb/7,000 grains)(1 ton/2,000 lb)(10,000 cfm)
(60 min/hr)(8,760 hr/yr)

Quantity of PM10 emitted = (0.000081 grains/dscf)(1 lb/7,000 grains)(1 ton/2,000 lb)(10,000 cfm)
(60 min/hr)(8,760 hr/yr)
= 0.03 ton/year

ELECTROPLATING PROCESS
Nickel Sulfamate

Process Data

Process:	Nickel Sulfamate
Estimation Method:	Emission Factors and Mass Balance
Maximum Process Throughput:	
	70 gallons per year on a stripping line
	80 gallons per year on a barrel line
Boric Acid =	7 ounces per gallon
Nickel Chloride =	2 ounces per gallon
Liquid Nickel Sulfamate =	22 ounces per gallon
	0.5 gallons per week
Nikal MP-200 =	3 percent by volume
Nickel Anodes =	250 pounds per week
Source of Emissions:	USEPA AP-42 and Mass Balance
Pollutants Generated By Process:	PM, PM10, SOx, VOCs and HAPs
Pollution Control Equipment:	Wet Scrubber
Control Efficiency:	99 percent capture efficiency for particulate
	98 percent control efficiency for particulate
	20 percent control efficiency for sulfur oxides

Potential Criteria Emissions Estimates Before Controls

Boric Acid

Boric Acid does not contain volatiles, sulfur oxides nitrous oxides, carbon monoxide, nor particulates. Therefore, there are no criteria pollutants generated from the utilizing Boric Acid.

Nickel Chloride

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Number of stripping lines) (1 pound/16 ounces)(1 ton/2,000 pounds)+ (Maximum Process Throughput) (Percent VOC)(Number of barrel lines)(1 pound/16 ounces) (1 ton/2,000 pounds)

Quantity of VOCs emitted = (2.0 oz/gal)(70 gal/yr)(0.41)(9 stripping lines)(1 lb/16 oz)(1 ton/2,000 lb) + (2.0 oz/gal)(80 gal/yr)(0.41)(2 barrel lines)(1 lb/16 oz)(1 ton/ 2,000 lb) = 0.020 tons/year

Liquid Nickel Sulfamate

Quantity of SOx emitted = (Maximum Process Throughput)(Percent Sulfamate)(Emission Factor) (Number of stripping lines)(1 pound/16 ounces)(1 ton/2,000 pounds)+ (Maximum Process Throughput)(Percent Sulfamate)(Emission Factor) (Number of barrel lines)(1 pound/16 ounces)(1 ton/2,000 pounds)+ (Maximum Process Throughput)(Percent Sulfamate)(Emission Factor) (1 pound/16 ounces)(52 weeks/year)(1 ton/2,000 pounds)

Quantity of SOx emitted = (22.0 oz/gal)(70 gal/yr)(0.68)(0.10 lb/ton)(9 stripping lines)(1 lb/16 oz)
(1 ton/2,000 lb)(1 ton/2,000 lb)+ (22.0 oz/gal)(80 gal/yr)(0.68)(0.10 lb/ton)
(2 barrel lines)(1 lb/16 oz)(1 ton/2,000 lb)(1 ton/2,000 lb)+ (22.0 oz/gal)
(0.5 gal/wk)(0.68)(0.10 lb/ton)(1 lb/16 oz)(52 wk/yr)(1 ton/2,000 lb)
(1 ton/2,000 lb)
= 0.000019 tons/year

Nikal MP-200

Nikal MP-200 does not contain volatiles, sulfur oxides, nitrous oxides, carbon monoxide, nor particulates. Therefore, there are no criteria pollutants generated from the utilizing Nikal MP-200.

Nickel Anodes

Quantity of PM emitted = (Emission Factor)(0.01 A-hr/dscf)(1 lb/7,000 grains)(1 ton/2,000 lb)(10,000 cfm)
(60 min/hr)(8,760 hr/yr)

Quantity of PM emitted = (0.63 grains/A-hr)(0.01 A-hr/dscf)(1 lb/7,000 grains)(1 ton/2,000 lb)
(10,000 cfm)(60 min/hr)(8,760 hr/yr)
= 2.36 ton/year

Quantity of PM10 emitted = (Emission Factor)(0.01 A-hr/dscf)(1 lb/7,000 grains)(1 ton/2,000 lb)
(10,000 cfm)(60 min/hr)(8,760 hr/yr)

Quantity of PM10 emitted = (0.63 grains/A-hr)(0.01 A-hr/dscf)(1 lb/7,000 grains)(1 ton/2,000 lb)
(10,000 cfm)(60 min/hr)(8,760 hr/yr)
= 2.36 ton/year

Quantity of HAP (Nickel) emitted = (Emission Factor)(0.01 A-hr/dscf)(1 lb/7,000 grains)
(1 ton/2,000 lb)(10,000 cfm)(60 min/hr)(8,760 hr/yr)

Quantity of HAP (Nickel) emitted = (0.63 grains/A-hr)(0.01 A-hr/dscf)(1 lb/7,000 grains)
(1 ton/2,000 lb)(10,000 cfm)(60 min/hr)(8,760 hr/yr)
= 2.36 ton/year

Potential Criteria Emissions Estimates After Controls

Boric Acid

Boric Acid does not contain volatiles, sulfur oxides, nitrous oxides, carbon monoxide, nor particulates. Therefore, there are no criteria pollutants generated from the utilizing Boric Acid.

Nickel Chloride

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Number of stripping lines)
(1 pound/16 ounces)(1 ton/2,000 pounds)+ (Maximum Process Throughput)
(Percent VOC)(Number of barrel lines)(1 pound/16 ounces)
(1 ton/2,000 pounds)

Quantity of VOCs emitted = (2.0 oz/gal)(70 gal/yr)(0.41)(9 stripping lines)(1 lb/16 oz)(1 ton/2,000 lb)
+ (2.0 oz/gal)(80 gal/yr)(0.41)(2 barrel lines)(1 lb/16 oz)(1 ton/ 2,000 lb)
= 0.020 tons/year

Liquid Nickel Sulfamate

Quantity of SOx emitted = [(Maximum Process Throughput)(Percent Sulfamate)(Emission Factor)
(Number of stripping lines)(1 pound/16 ounces)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent Sulfamate)(Emission Factor)
(Number of barrel lines)(1 pound/16 ounces)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent Sulfamate)(Emission Factor)
(1 pound/16 ounces)(52 weeks/year)(1 ton/2,000 pounds)]
(1- (capture efficiency)(control efficiency))

Quantity of SOx emitted = [(22.0 oz/gal)(70 gal/yr)(0.68)(0.10 lb/ton)(9 stripping lines)(1 lb/16 oz)
(1 ton/2,000 lb)+ (22.0 oz/gal)(80 gal/yr)(0.68)(0.10 lb/ton)(2 barrel lines)
(1 lb/16 oz)(1 ton/2,000 lb)(1 ton/2,000 lb)+ (22.0 oz/gal)
(0.5 gal/wk)(0.68)(0.10 lb/ton)(1 lb/16 oz)(52 wk/yr)
(1 ton/2,000 lb)(1 ton/2,000 lb)](1.0 – (0.99*0.20))
= 0.0000015 tons/year

Nikal MP-200

Nikal MP-200 does not contain volatiles, sulfur oxides, nitrous oxides, carbon monoxide, nor particulates. Therefore, there are no criteria pollutants generated from the utilizing Nikal MP-200.

Nickel Anodes

Quantity of PM emitted = (Emission Factor)(1 lb/7,000 grains)(1 ton/2,000 lb)(10,000 cfm)
(60 min/hr)(8,760 hr/yr)

Quantity of PM emitted = (0.0000067 grains/dscf)(1 lb/7,000 grains)(1 ton/2,000 lb)(10,000 cfm)
(60 min/hr)(8,760 hr/yr)
= 0.0025 ton/year

Quantity of PM10 emitted = (Emission Factor)(1 lb/7,000 grains)(1 ton/2,000 lb)(10,000 cfm)
(60 min/hr)(8,760 hr/yr)

Quantity of PM10 emitted = (0.0000067 grains/dscf)(1 lb/7,000 grains)(1 ton/2,000 lb)(10,000 cfm)
(60 min/hr)(8,760 hr/yr)
= 0.0025 ton/year

Quantity of HAP (Nickel) emitted = (Emission Factor)(1 lb/7,000 grains)(1 ton/2,000 lb)(10,000 cfm)
(60 min/hr)(8,760 hr/yr)

Quantity of HAP (Nickel) emitted = (0.0000067 grains/dscf)(1 lb/7,000 grains)(1 ton/2,000 lb)(10,000 cfm)
(60 min/hr)(8,760 hr/yr)
= 0.0025 ton/year

ELECTROPLATING PROCESS
Gold Cyanide

Process Data

Process:	Gold Cyanide
Estimation Method:	Mass Balance
Maximum Process Throughput:	
	40 gallons per year on a stripping line or
	80 gallons per year on a stripping line
	80 gallons per year on a barrel line
Ronovel CM Acid Salt =	0.53 ounces per gallon
Ronovel CM Additive =	0.25 percent of mixture
Ronovel CM Cobalt Concentrate =	2.0 percent of mixture
Ronovel CM Conductivity Salt =	2.7 ounces per gallon
Ronovel CM Makeup Solution =	75.0 percent of mixture
CM Gold Salt =	2,000 ounces per month for all lines
Amount Applied =	1,810 ounces per month for all lines
Amount Reclaimed =	160 ounces per month for all lines
Amount Wasted =	28 ounces per month for all lines
Source of Emissions:	Mass Balance
Pollutants Generated By Process:	PM, PM10, VOCs and HAPs
Pollution Control Equipment:	Wet Scrubber
Control Efficiency:	99 percent capture efficiency for particulate
	98 percent control efficiency for particulate
	20 percent control efficiency for sulfur oxides

Potential Criteria Emissions Estimates Before Controls

Ronovel CM Acid Salt

Ronovel CM Acid Salt does not contain volatiles, sulfur oxides, nitrous oxides, carbon monoxide, nor particulates. Therefore, there are no criteria pollutants generated from the utilizing Ronovel CM Acid Salt.

Ronovel CM Additive

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+ (Maximum Process Throughput)(Percent VOC)(Specific Gravity) (Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.0025)(40 gal/yr)(0.90)(1.14)(7 stripping lines)(8.34 lb/gal) (1 ton/2,000 lb)+ (0.0025)(80 gal/yr)(0.90)(1.14)(2 stripping lines) (8.34 lb/gal)(1 ton/2,000 lb) + (0.0025)(80 gal/yr)(0.90)(1.14) (2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 0.0064 tons/year

Ronovel CM Cobalt Concentrate

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity) (Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+ (Maximum Process Throughput)(Percent VOC)(Specific Gravity) (Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.02)(40 gal/yr)(0.95)(8.92)(7 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+(0.02)(80 gal/yr)(0.95)(8.92)(2 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+(0.02)(80 gal/yr)(0.95)(8.92)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 0.42 tons/year

Ronovel CM Conductivity Salt

Ronovel CM Conductivity Salt does not contain volatiles, sulfur oxides, nitrous oxides, carbon monoxide, nor particulates. Therefore, there are no criteria pollutants generated from the utilizing Ronovel CM Conductivity Salt.

Ronovel CM Makeup Solution

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.75)(40 gal/yr)(0.80)(1.10)(7 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.75)(80 gal/yr)(0.80)(1.10)(2 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.75)(80 gal/yr)(0.80)(1.10)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 1.26 tons/year

Gold (CM Gold Salt)

Quantity of PM emitted = (Maximum Process Throughput - Quantity Applied to Pins – Quantity Reclaimed
– Amount Wasted)(12 months/year)(1 lb/16 ounces)(1 ton/2,000 lb)

Quantity of PM emitted = (2,000 oz/month – 1,810 oz/month – 160 oz/month – 28 oz/month)
(12 months/year)(1 lb/16 ounces)(1 ton/2,000 lb)
= 0.00075 tons/yr

Quantity of PM10 emitted = (Maximum Process Throughput - Quantity Applied to Pins – Quantity
Reclaimed – Amount Wasted)(12 months/year)(1 lb/16 ounces)
(1 ton/2,000 lb)

Quantity of PM10 emitted = (2,000 oz/month – 1,810 oz/month – 160 oz/month – 28 oz/month)
(12 months/year)(1 lb/16 ounces)(1 ton/2,000 lb)
= 0.00075 tons/yr

Potential Criteria Emissions Estimates Before Controls

Ronovel CM Acid Salt

Ronovel CM Acid Salt does not contain volatiles, sulfur oxides, nitrous oxides, carbon monoxide, nor particulates. Therefore, there are no criteria pollutants generated from the utilizing Ronovel CM Acid Salt.

Ronovel CM Additive

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)(Number of
stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.0025)(40 gal/yr)(0.90)(1.14)(7 stripping lines)(8.34 lb/gal)
(1 ton/2,000 lb)+ (0.0025)(80 gal/yr)(0.90)(1.14)(2 stripping lines)
(8.34 lb/gal)(1 ton/2,000 lb) + (0.0025)(80 gal/yr)(0.90)(1.14)
(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 0.0064 tons/year

Ronovel CM Cobalt Concentrate

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.02)(40 gal/yr)(0.95)(8.92)(7 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+(0.02)(80 gal/yr)(0.95)(8.92)(2 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+(0.02)(80 gal/yr)(0.95)(8.92)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 0.42 tons/year

Ronovel CM Conductivity Salt

Ronovel CM Conductivity Salt does not contain volatiles, sulfur oxides, nitrous oxides, carbon monoxide, nor particulates. Therefore, there are no criteria pollutants generated from the utilizing Ronovel CM Conductivity Salt.

Ronovel CM Makeup Solution

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.75)(40 gal/yr)(0.80)(1.10)(7 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.75)(80 gal/yr)(0.80)(1.10)(2 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.75)(80 gal/yr)(0.80)(1.10)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 1.26 tons/year

Gold (CM Gold Salt)

Quantity of PM emitted = (Maximum Process Throughput - Quantity Applied to Pins – Quantity Reclaimed
- Amount Wasted)(12 months/year)(1 lb/16 ounces)(1 ton/2,000 lb)
(1- (capture efficiency)(control efficiency))

Quantity of PM emitted = (2,000 oz/month – 1,810 oz/month – 160 oz/month – 28 oz/month)
(12 months/year)(1 lb/16 ounces)(1 ton/2,000 lb)(1.0 – (0.99*0.98))
= 0.000022 tons/yr

Quantity of PM10 emitted = (Maximum Process Throughput - Quantity Applied to Pins – Quantity
Reclaimed – Amount Wasted)(12 months/year)(1 lb/16 ounces)
(1 ton/2,000 lb)(1- (capture efficiency)(control efficiency))

Quantity of PM10 emitted = (2,000 oz/month – 1,810 oz/month – 160 oz/month – 28 oz/month)
(12 months/year)(1 lb/16 ounces)(1 ton/2,000 lb)(1.0 – (0.99*0.98))
= 0.000022 tons/yr

ELECTROPLATING PROCESS
Solderon Tin

Process Data

Process:	Solderon Tin
Estimation Method:	Mass Balance
Maximum Process Throughput:	
	75 gallons per year on a stripping line
	80 gallons per year on a barrel line
Solderon Acid =	11.5 percent of mixture
Solderon BTD Additive =	4 percent of mixture
Solderon BTD Carrier =	4 percent of mixture
Solderon Tin Concentrate =	33 percent of mixture
	1 gallon per year
Tin Anodes =	200 pounds per week
Source of Emissions:	Mass Balance
Pollutants Generated By Process:	PM, PM10, & VOCs
Pollution Control Equipment:	Wet Scrubber
Control Efficiency:	99 percent capture efficiency for particulate
	98 percent control efficiency for particulate
	20 percent control efficiency for sulfur oxides

Potential Criteria Emissions Estimates Before Controls

Solderon Acid

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.115)(75 gal/yr)(0.65)(1.28)(9 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.115)(80 gal/yr)(0.65)(1.28)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 0.33 tons/year

Solderon BTD Additive

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.04)(75 gal/yr)(0.97)(0.98)(9 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.04)(80 gal/yr)(0.97)(0.98)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 0.13 tons/year

Solderon BTD Carrier

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.04)(75 gal/yr)(0.60)(1.062)(9 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.04)(80 gal/yr)(0.60)(1.062)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 0.089 tons/year

Tin (Solderon Tin Concentrate + Tin Anodes)

Quantity Applied to Pins = (Thickness)(Area of Pin)(Specific Gravity of Tin)(Number of Pins/Month)
(12 months/year)(62.3 pounds/cubic feet)(1 cubic feet/ 1,728 cubic inches)
(1 ton/2,000 pounds)

Quantity Applied to Pins = (0.0000015 in/pin)(1.0 in x 0.025 in)(1.55)(583,072,400 pins/month)
(12 months/yr)(62.3 lb/ft^3)(1 ft^3/1,728 in^3)(1 ton/2,000 lb)
= 0.0073 tons/year

Quantity Wasted to Landfill = 1.00 ton per year spent Tin collected in one 55 gallon drum for disposal

Quantity Wasted to Landfill = 1.00 ton/year

Quantity of PM emitted = (Maximum Process Throughput)(Percent Tin)(Number of lines)
(1 lb/16 oz)(1 ton/2,000 pounds) – (Quantity Applied to Pins)
– (Quantity Wasted)

Quantity of PM emitted = (40 oz/gal)(1 gal/yr)(0.33)(11 process lines)(1 lb/16 oz)(1 ton/2,000 lb)
+ (200 lb/wk)(0.30)(52 wk/yr)(1 ton/2,000 lb) – 0.0073 tons/year
– 1.00 tons/year
= 0.56 tons/year

Quantity of PM10 emitted = (Maximum Process Throughput)(Percent Tin)(Number of lines)
(1 lb/16 oz)(1 ton/2,000 pounds) – (Quantity Applied to Pins)
– (Quantity Wasted)

Quantity of PM10 emitted = (40 oz/gal)(1 gal/yr)(0.33)(11 process lines)(1 lb/16 oz)(1 ton/2,000 lb)
+ (200 lb/wk)(0.30)(52 wk/yr)(1 ton/2,000 lb) – 0.0073 tons/year
– 1.00 tons/year
= 0.56 tons/year

Potential Criteria Emissions Estimates After Controls

Solderon Acid

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.115)(75 gal/yr)(0.65)(1.28)(9 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.115)(80 gal/yr)(0.65)(1.28)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 0.33 tons/year

Solderon BTD Additive

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.04)(75 gal/yr)(0.97)(0.98)(9 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.04)(80 gal/yr)(0.97)(0.98)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 0.13 tons/year

Solderon BTD Carrier

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.04)(75 gal/yr)(0.60)(1.062)(9 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.04)(80 gal/yr)(0.60)(1.062)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
= 0.089 tons/year

Tin (Solderon Tin Concentrate + Tin Anodes)

Quantity Applied to Pins = (Thickness)(Area of Pin)(Specific Gravity of Tin)
(Number of Pins/Month)(12 months/year)(62.3 pounds/cubic feet)
(1 cubic feet/ 1,728 cubic inches)(1 ton/2,000 pounds)

Quantity Applied to Pins = (0.0000015 in/pin)(1.0 in x 0.025 in)(1.55)(583,072,400 pins/month)
(12 months/yr)(62.3 lb/ft^3)(1 ft^3/1,728 in^3)(1 ton/2,000 lb)
= 0.0073 tons/year

Quantity Wasted to Landfill = 1.00 tons/year spent Tin collected in one 55 gallon drum for disposal

Quantity Wasted to Landfill = 1.00 tons/year

Quantity of PM emitted = [(Maximum Process Throughput)(Percent Tin)(Number of lines)
(1 lb/16 oz)(1 ton/2,000 pounds) – Quantity Applied to Pins – Quantity Wasted]
(1- (capture efficiency)(control efficiency))

Quantity of PM emitted = [(40 oz/gal)(1 gal/yr)(0.33)(11 process lines)(1 lb/16 oz)(1 ton/2,000 lb)
+ (200 lb/wk)(0.30)(52 wk/yr)(1 ton/2,000 lb)
– 0.0073 tons/yr - 1.00 tons/yr](1.0 – (0.99*0.98))
= 0.017 tons/year

Quantity of PM10 emitted = [(Maximum Process Throughput)(Percent Tin)(Number of lines)(1 lb/16 oz)
(1 ton/2,000 pounds) – Quantity Applied to Pins – Quantity Wasted]
(1- (capture efficiency)(control efficiency))

Quantity of PM10 emitted = [(40 oz/gal)(1 gal/yr)(0.33)(11 process lines)(1 lb/16 oz)(1 ton/2,000 lb)
+ (200 lb/wk)(0.30)(52 wk/yr)(1 ton/2,000 lb)
– 0.0073 tons/yr – 1.00 tons/yr](1.0 – (0.99*0.98))
= 0.017 tons/year

ELECTROPLATING PROCESS
Solderon Lead

Process Data

Process:	Solderon Lead
Estimation Method:	Mass Balance
Maximum Process Throughput:	
	75 gallons per year on a stripping line
	80 gallons per year on a barrel line
Solderon Lead Concentrate =	33 percent of mixture
	2 additional liters added to mixture per year
Source of Emissions:	Mass Balance
Pollutants Generated By Process:	PM, PM10, VOCs, HAPs
Pollution Control Equipment:	Wet Scrubber
Control Efficiency:	99 percent capture efficiency for particulate
	98 percent control efficiency for particulate
	20 percent control efficiency for sulfur oxides

Potential Criteria Emissions Estimates Before Controls

Solderon Lead Concentrate

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(1gal/3.78 liters)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.33)(75 gal/yr)(0.70)(1.72)(9 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.33)(80 gal/yr)(0.70)(1.72)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (2 liters/yr)(0.70)(1.72)(1 gal/3.78 liters)(8.34 lb/gal)(1 ton/2,000 lb)
= 1.39 tons/year

Quantity Applied to Pins = (Thickness)(Area of Pin)(Specific Gravity of Lead)
(Number of Pins/Month)(12 months/year)(62.3 pounds/cubic feet)
(1 cubic feet/ 1,728 cubic inches)(1 ton/2,000 pounds)

Quantity Applied to Pins = (0.0000020 in/pin)(1.0 in x 0.025 in)(1.72)(583,072,400 pins/month)
(12 months/yr)(62.3 lb/ft^3)(1 ft^3/1,728 in^3)(1 ton/2,000 lb)
= 0.011 tons/year

Quantity of PM emitted = (Maximum Process Throughput)(Percent PM)(Number of stripping lines)
(0.0022 lb/gram)(1 ton/2,000 pounds)+ (Maximum Process Throughput)
(Percent PM)(Number of barrel lines)(0.0022 lb/gram)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent PM)(0.0022 lb/gram)
(1 ton/2,000 pounds) – (Quantity Applied to Pins)

Quantity of PM emitted = (300 grams/liter)(75 gal/yr)(0.30)(9 stripping lines)(0.0022 lb/gram)
(1 ton/2,000 lb)(1 gal/3.78 liters)+ (300 grams/liter)(80 gal/yr)(0.30)
(2 barrel lines)(0.0022 lb/gram)(1 ton/2,000 lb)(1 gal/3.78 liters)
+ (300 grams/liter)(2 liters/yr)(0.30)(0.0022 lb/gram)(1 ton/2,000 lb)
– 0.011 tons/yr
= 0.022 tons/year

Quantity of PM10 emitted = (Maximum Process Throughput)(Percent PM)(Number of stripping lines)
(0.0022 lb/gram)(1 ton/2,000 pounds)+ (Maximum Process Throughput)
(Percent PM)(Number of barrel lines)(0.0022 lb/gram)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent PM)(0.0022 lb/gram)
(1 ton/2,000 pounds) – (Quantity Applied to Pins)

Quantity of PM10 emitted = (300 grams/liter)(75 gal/yr)(0.30)(9 stripping lines)(0.0022 lb/gram)
(1 ton/2,000 lb)(1 gal/3.78 liters)+ (300 grams/liter)(80 gal/yr)(0.30)
(2 barrel lines)(0.0022 lb/gram)(1 ton/2,000 lb)(1 gal/3.78 liters)
+ (300 grams/liter)(2 liters/yr)(0.30)(0.0022 lb/gram)(1 ton/2,000 lb)
– 0.011 tons/yr
= 0.022 tons/year

Quantity of HAP(Lead) emitted = (Maximum Process Throughput)(Percent PM)
(Number of stripping lines)(0.0022 lb/gram)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent PM)(Number of barrel lines)
(0.0022 lb/gram)(1 ton/2,000 pounds)+ (Maximum Process Throughput)
(Percent PM)(0.0022 lb/gram)(1 ton/2,000 pounds)
– (Quantity Applied to Pins)

Quantity of HAP (Lead) emitted = (300 grams/liter)(75 gal/yr)(0.30)(9 stripping lines)(0.0022 lb/gram)
(1 ton/2,000 lb)(1 gal/3.78 liters)+ (300 grams/liter)(80 gal/yr)(0.30)
(2 barrel lines)(0.0022 lb/gram)(1 ton/2,000 lb)(1 gal/3.78 liters)
+ (300 grams/liter)(2 liters/yr)(0.30)(0.0022 lb/gram)(1 ton/2,000 lb)
– 0.011 tons/yr
= 0.022 tons/year

Potential Criteria Emissions Estimates After Controls

Solderon Lead Concentrate

Quantity of VOCs emitted = (Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of stripping lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(Number of barrel lines)(8.34 pounds/gallon)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent VOC)(Specific Gravity)
(1gal/3.78 liters)(8.34 pounds/gallon)(1 ton/2,000 pounds)

Quantity of VOCs emitted = (0.33)(75 gal/yr)(0.70)(1.72)(9 stripping lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (0.33)(80 gal/yr)(0.70)(1.72)(2 barrel lines)(8.34 lb/gal)(1 ton/2,000 lb)
+ (2 liters/yr)(0.70)(1.72)(1 gal/3.78 liters)(8.34 lb/gal)(1 ton/2,000 lb)
= 1.39 tons/year

Quantity Applied to Pins = (Thickness)(Area of Pin)(Specific Gravity of Copper)
(Number of Pins/Month)(12 months/year)(62.3 pounds/cubic feet)
(1 cubic feet/ 1,728 cubic inches)(1 ton/2,000 pounds)

Quantity Applied to Pins = (0.0000015 in/pin)(1.0 in x 0.025 in)(1.55)(583,072,400 pins/month)
(12 months/yr)(62.3 lb/ft^3)(1 ft^3/1,728 in^3)(1 ton/2,000 lb)
= 0.011 tons/year

Quantity of PM emitted = [(Maximum Process Throughput)(Percent PM)(Number of stripping lines)
(0.0022 lb/gram)(1 ton/2,000 pounds)+ (Maximum Process Throughput)
(Percent PM)(Number of barrel lines)(0.0022 lb/gram)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent PM)(0.0022 lb/gram)
(1 ton/2,000 pounds) – Quantity Applied to Pins]
(1- (capture efficiency)(control efficiency))

Quantity of PM emitted = [(300 grams/liter)(75 gal/yr)(0.30)(9 stripping lines)(0.0022 lb/gram)
(1 ton/2,000 lb)(1 gal/3.78 liters)+ (300 grams/liter)(80 gal/yr)(0.30)
(2 barrel lines)(0.0022 lb/gram)(1 ton/2,000 lb)(1 gal/3.78 liters)
+ (300 grams/liter)(2 liters/yr)(0.30)(0.0022 lb/gram)(1 ton/2,000 lb)
– 0.011 tons/yr](1.0 – (0.99*0.98))
= 0.00066 tons/year

Quantity of PM10 emitted = [(Maximum Process Throughput)(Percent PM)(Number of stripping lines)
(0.0022 lb/gram)(1 ton/2,000 pounds)+ (Maximum Process Throughput)
(Percent PM)(Number of barrel lines)(0.0022 lb/gram)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent PM)(0.0022 lb/gram)
(1 ton/2,000 pounds) – Quantity Applied to Pins]
(1- (capture efficiency)(control efficiency))

Quantity of PM10 emitted = [(300 grams/liter)(75 gal/yr)(0.30)(9 stripping lines)(0.0022 lb/gram)
(1 ton/2,000 lb)(1 gal/3.78 liters)+ (300 grams/liter)(80 gal/yr)(0.30)
(2 barrel lines)(0.0022 lb/gram)(1 ton/2,000 lb)(1 gal/3.78 liters)
+ (300 grams/liter)(2 liters/yr)(0.30)(0.0022 lb/gram)(1 ton/2,000 lb)
– 0.011 tons/yr](1.0 – (0.99*0.98))
= 0.00066 tons/year

Quantity of HAP (Lead) emitted = [(Maximum Process Throughput)(Percent PM)
(Number of stripping lines)(0.0022 lb/gram)(1 ton/2,000 pounds)+
(Maximum Process Throughput)(Percent PM)(Number of barrel lines)
(0.0022 lb/gram)(1 ton/2,000 pounds)+ (Maximum Process Throughput)
(Percent PM)(0.0022 lb/gram)(1 ton/2,000 pounds)]
(1- (capture efficiency)(control efficiency))

Quantity of HAP (Lead) emitted = [(300 grams/liter)(75 gal/yr)(0.30)(9 stripping lines)(0.0022 lb/gram)
(1 ton/2,000 lb)(1 gal/3.78 liters)+ (300 grams/liter)(80 gal/yr)(0.30)
(2 barrel lines)(0.0022 lb/gram)(1 ton/2,000 lb)(1 gal/3.78 liters)
+ (300 grams/liter)(2 liters/yr)(0.30)(11 process lines)(0.0022 lb/gram)
(1 ton/2,000 lb) – 0.011 tons/yr](1.0 – (0.99*0.98))
= 0.00066 tons/year

ELECTROPLATING PROCESS
Post Treatment Cleaner

Process Data

Process:	Post Treatment Cleaner
Estimation Method:	Mass Balance
Maximum Process Throughput:	
Neutra Rinse 80 =	40 gallons per week on a stripping line 30 gallons per week on a barrel line
Source of Emissions:	Mass Balance
Pollutants Generated By Process:	None
Pollution Control Equipment:	Wet Scrubber
Control Efficiency:	99 percent capture efficiency for particulate 98 percent control efficiency for particulate 20 percent control efficiency for sulfur oxides

According to the MSDS provided by Samtec, the post treatment cleaner does not contain volatiles, sulfur oxides, and nitrous oxides. The alkaline cleaner is comprised entirely of aqueous solution and therefore will not generate particulate emissions.

ELECTROPLATING PROCESS
Soldering

Process Data

Process:	Soldering
Estimation Method:	Mass Balance
Maximum Process Throughput:	
Rosin Core Solder =	10 grams per day per stripping line
Source of Emissions:	Mass Balance
Pollutants Generated By Process:	PM, PM10, and Lead
Pollution Control Equipment:	None

Potential Criteria Emissions Estimates Before Controls

Lead Wire

Quantity of PM emitted = (Maximum Process Throughput)(100 percent emitted)(Number of lines)
(365 days/year)(0.0022 lb/1 gram)(1 ton/2,000 pounds)

Quantity of PM emitted = (10 grams/day)(1.00)(9 stripping lines)(365 days/yr)(0.0022 lb/1 gram)
(1 ton/2,000 lb)
= 0.036 tons/year

Quantity of PM10 emitted = (Maximum Process Throughput)(100 percent emitted)(Number of lines)
(365 days/year)(0.0022 lb/1 gram)(1 ton/2,000 pounds)

Quantity of PM10 emitted = (10 grams/day)(1.00)(9 stripping lines)(365 days/yr)(0.0022 lb/1 gram)
(1 ton/2,000 lb)
= 0.036 tons/year

Quantity of HAPs emitted = (Maximum Process Throughput)(Percent HAP)(Number of lines)
(365 days/year)(0.0022 lb/1 gram)(1 ton/2,000 pounds)

Quantity of HAPs emitted = (10 grams/day)(0.40)(9 stripping lines)(365 days/yr)(0.0022 lb/1 gram)
(1 ton/2,000 lb)
= 0.0145 tons/year

WASTEWATER PRETREATMENT

Process Data

Process:	Wastewater Pretreament
Estimation Method:	Emission Factors
Maximum Process Throughput:	22,000 gallons per day
Source of Emissions:	US EPA AP-42
Pollutants Generated By Process:	VOCs
Pollution Control Equipment:	None

Potential Criteria Emissions Estimates Before Controls

Wastewater Pretreatment

Quantity of VOC emitted = (Gallons of Wastewater)(Emission Factor)(8,760 hours/year)
(1 ton/2,000 pounds)

Quantity of VOC emitted = (22,000 gallons/day)(0.03 lb/1,000 gallons)(365 days/year)
(1 ton/2,000 pounds)
= 0.120 tons/year

SPACE HEATERS

Process Data

Process:	39 Space Heaters
Estimation Method:	Emission Factors
Maximum Process Throughput:	0.26 MMBTU/hr
Source of Emissions:	US EPA AP-42
Pollutants Generated By Process:	PM, PM10, SOx, NOx, VOC, CO
Pollution Control Equipment:	None

Potential Criteria Emissions Estimates Before Controls

Space heater #1 -#39

Quantity of PM emitted = (Natural Gas Heat Input)(Emission Factor)(1 $MMft^3$/ 1,000 MMBTU) (8,760 hours/year)(1 ton/2,000 pounds)(# Space Heaters)

Quantity of PM emitted = (0.26 MMBTU/hr)(3.00 lb/ $MMft^3$)(1 $MMft^3$/ 1,000 MMBTU)(8,760 hours/year)(1 ton/2,000 pounds)(39)
= 0.133 tons/year

Quantity of PM10 emitted = (Natural Gas Heat Input)(Emission Factor)(1 $MMft^3$/ 1,000 MMBTU) (8,760 hours/year)(1 ton/2,000 pounds)(# Space Heaters)

Quantity of PM10 emitted = (0.26 MMBTU/hr)(3.00 lb/ $MMft^3$)(1 $MMft^3$/ 1,000 MMBTU)(8,760 hours/year)(1 ton/2,000 pounds)(39)
= 0.133 tons/year

Quantity of SOx emitted = (Natural Gas Heat Input)(Emission Factor)(1 $MMft^3$/ 1,000 MMBTU) (8,760 hours/year)(1 ton/2,000 pounds)(# Space Heaters)

Quantity of SOx emitted = (0.26 MMBTU/hr)(0.60 lb/ $MMft^3$)(1 $MMft^3$/ 1,000 MMBTU)(8,760 hours/year)(1 ton/2,000 pounds)(39)
= 0.0266 tons/year

Quantity of NOx emitted = (Natural Gas Heat Input)(Emission Factor)(1 $MMft^3$/ 1,000 MMBTU) (8,760 hours/year)(1 ton/2,000 pounds)(# Space Heaters)

Quantity of NOx emitted = (0.26 MMBTU/hr)(100.00 lb/ $MMft^3$)(1 $MMft^3$/ 1,000 MMBTU)(8,760 hours/year)(1 ton/2,000 pounds)(39)
= 4.441 tons/year

Quantity of VOC emitted = (Natural Gas Heat Input)(Emission Factor)(1 $MMft^3$/ 1,000 MMBTU) (8,760 hours/year)(1 ton/2,000 pounds)(# Space Heaters)

Quantity of VOC emitted = (0.26 MMBTU/hr)(5.30 lb/ $MMft^3$)(1 $MMft^3$/ 1,000 MMBTU)(8,760 hours/year)(1 ton/2,000 pounds)(39)
= 0.235 tons/year

Quantity of CO emitted = (Natural Gas Heat Input)(Emission Factor)(1 $MMft^3$/ 1,000 MMBTU) (8,760 hours/year)(1 ton/2,000 pounds)(# Space Heaters)

Quantity of CO emitted = (0.26 MMBTU/hr)(20.0 lb/ $MMft^3$)(1 $MMft^3$/ 1,000 MMBTU)(8,760 hours/year)(1 ton/2,000 pounds)(39)
= 0.888 tons/year

Appendix A: Emissions Calculations
Non Chromium Electroplating
Company Name: Samtec, Inc.
Address City IN Zip: 520 Park East Blvd., New Albany, Indiana 47150
Registration Number: 043-20264
Plt ID: 043-00059
Reviewer: Brian J. Pedersen
Application Date: October 15. 2004

Before Pollution Control Devices

	PM (tons/yr)	PM10 (tons/yr)	SOX (tons/yr)	NOX (tons/yr)	VOC (tons/yr)	CO (tons/yr)	HAP (tons/yr)
Acid Activator	0.00	0.00	0.00003	0.00	0.00	0.00	0.00
Akaline Cleaner	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Copper	0.220	0.22	0.00004	0.00	0.011	0.00	0.00
Nickel	2.36	2.36	0.00002	0.00	0.020	0.00	2.36
Gold	0.007	0.007	0.00	0.00	1.69	0.00	0.00
Tin	0.560	0.560	0.00	0.00	0.549	0.00	0.00
Lead	0.022	0.022	0.00	0.00	1.39	0.00	0.022
Post Treatment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Soldering (Tin Lead Alloy)	0.036	0.036	0.00	0.00	0.00	0.00	0.014
Wastewater Pretreatment	0.00	0.00	0.00	0.00	0.120	0.00	0.00
Previous Total (ton/yr)	3.21	3.21	0.000	0.000	3.78	0.00	2.40
Production Increase	20%	20%	20%	20%	20%	20%	20%
New Total	**3.85**	**3.85**	**0.0001**	**0.00**	**4.53**	**0.00**	**2.88**

After Pollution Control Devices

	PM (tons/yr)	PM10 (tons/yr)	SOX (tons/yr)	NOX (tons/yr)	VOC (tons/yr)	CO (tons/yr)	HAP (tons/yr)
Acid Activator	0.00	0.00	0.00002	0.00	0.00	0.00	0.00
Akaline Cleaner	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Copper	0.030	0.030	0.00003	0.00	0.011	0.00	0.00
Nickel	0.002	0.002	0.000002	0.00	0.020	0.00	0.002
Gold	0.00002	0.00002	0.00	0.00	1.69	0.00	0.00
Tin	0.017	0.017	0.00	0.00	0.549	0.00	0.00
Lead	0.001	0.001	0.00	0.00	1.39	0.00	0.001
Post Treatment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Soldering (Tin Lead Alloy)	0.036	0.036	0.00	0.00	0.00	0.00	0.014
Wastewater Pretreatment	0.00	0.00	0.00	0.00	0.120	0.00	0.00
Previous Total (ton/yr)	0.086	0.086	0.00	0.00	3.78	0.00	0.017
Production Increase	20%	20%	20%	20%	20%	20%	20%
New Total	**0.103**	**0.103**	**0.0001**	**0.00**	**4.53**	**0.00**	**0.020**

All Previous Totals were submitted by the source utilizing AP-42 emission factors, Chapter 12, Table 12.20-4 and mass balances.
HAPS for the Soldering are Lead, HAP content is 40%.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Space Heaters

Company Name: Samtec, Inc.
Address City IN Zip: 520 Park East Blvd., New Albany, Indiana 47150
Registration Number: 043-20264
Plt ID: 043-00059
Reviewer: Brian J. Pedersen
Application Date: October 15. 2004

Unit ID	Number of Units	Total Heat Input Capacity (MMBtu/hr)
A1-A8	8	3.76
A9-A10	2	0.940
B1	1	0.400
C1-C28	28	7.28
D1	1	0.235
E1-E4	4	0.804
F1	1	0.200
G1	1	0.180

Unit	Number of	Total Heat Input Capacity (MMBtu/hr)
H1, H2	2	0.260
I1-I4	4	0.500
J1-J5	5	0.600
K1	1	0.090
L1-L4	4	0.312
M1	1	0.075
Total Heat Input Capacity (MMBtu/hr)		15.6

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
15.6	137

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.90	7.60	0.600	100 **see below	5.50	84.0
Potential Emission in tons/yr	0.130	0.521	0.041	6.85	0.377	5.75

*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 A-26 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler
HAPs Emissions

Company Name: **Samtec, Inc.**
Address City IN Zip: **520 Park East Blvd., New Albany, Indiana 47150**
Registration Number: **043-20264**
Plt ID: **043-00059**
Reviewer: **Brian J. Pedersen**
Application Date: **October 15. 2004**

	HAPs - Organics				
	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	0.00210	0.00120	0.07500	1.80000	0.00340
Potential Emission in tons/yr	0.000144	0.000082	0.005138	0.123306	0.000233

	HAPs - Metals					
	Lead	Cadmium	Chromium	Manganese	Nickel	
Emission Factor in lb/MMcf	0.0005	0.0011	0.0014	0.0004	0.0021	**Total**
Potential Emission in tons/yr	0.00003	0.00008	0.00010	0.00003	0.00014	**0.129**

Methodology is the same as page A-25.

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

Appendix A: Emission Calculations
Internal Combustion Engines - Propane Fuel
Turbine (<100 HP)
Reciprocating

Company Name: **Samtec, Inc.**
Address City IN Zip: **520 Park East Blvd., New Albany, Indiana 47150**
Permit Number: **043-20264**
Plt ID: **043-00059**
Reviewer: **Brian J. Pedersen**
Application Date: **October 15. 2004**

Emissions calculated based on output rating (hp)

Heat Input Capacity Horsepower (hp)	Potential Throughput hp-hr/yr
60.4	529104.0

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/hp-hr	0.00002	0.0001	0.0000	0.0049	0.0004	0.0009
Potential Emission in tons/yr	0.007	0.026	0.0004	1.30	0.093	0.238

Methodology

Potential Througput (hp-hr/yr) = hp * 8760 hr/yr

To convert from horsepower to Btu/hr use lb/hp-hr = lb/MMBtu heat input, MMBtu/hr 1/operating HP, 1/hp

Emission Factors are from AP42 (Supplement F 8/00), Table 3.2-1
Emission (tons/yr) = [Heat input rate (MMBtu/hr) x Emission Factor (lb/MMBtu)] * 8760 hr/yr / (2,000 lb/ton)
Emission (tons/yr) = [Potential Throughput (hp-hr/yr) x Emission Factor (lb/hp-hr)] / (2,000 lb/ton)

Appendix A: Emissions Calculations
Total Source Emissions Summary

Company Name: Samtec, Inc.
Address City IN Zip: 520 Park East Blvd., New Albany, Indiana 47150
Registration Number: 043-20264
Plt ID: 043-00059
Reviewer: Brian J. Pedersen
Date: October 15. 2004

Criteria Pollutants: Unrestricted Potential Emissions / **Criteria Pollutants: After Controls Potential Emissions**

Unit ID/Control Device	Process	Potential PM (tons/yr)	Potential PM10 (tons/yr)	Potential SO2 (tons/yr)	Potential NOx (tons/yr)	Potential VOC (tons/yr)	Potential CO (tons/yr)	Potential PM (tons/yr)	Potential PM10 (tons/yr)	Potential SO2 (tons/yr)	Potential NOx (tons/yr)	Potential VOC (tons/yr)	Potential CO (tons/yr)
PE1-PE22, PE-30, and PE62-PE65	Non Chromium Electroplating	3.85	3.85	0.00	0.00	4.53	0.00	0.103	0.103	0.00	0.00	4.53	0.00
A1-A10,B1,C1-C28,D1,E1-E4,F1,G1,H1,I1-I4,J1-J5,K1,L1-L4,M1,PE61	Combustion Units (Internal Combustion Engine and Space Heaters)	0.137	0.547	0.0410	8.15	0.470	5.99	0.137	0.547	0.0410	8.15	0.470	5.99
PE26 and PE27	woodworking	0.923	0.923	0.00	0.00	0.00	0.00	0.003	0.003	0.00	0.00	0.00	0.00
	Overall Total	**4.91**	**5.32**	**0.041**	**8.15**	**5.00**	**5.99**	**0.243**	**0.653**	**0.041**	**8.15**	**5.00**	**5.99**

HAPs: Unrestricted Potential Emissions

Unit ID	Process	Potential Toluene (tons/yr)	Potential Nickel (tons/yr)	Potential Chromium (tons/yr)	Potential Formaldehyde (tons/yr)	Potential Lead (tons/yr)	Potential Hexane (tons/yr)	Potential Cadmium (tons/yr)	Potential Manganese (tons/yr)	Potential Benzene (tons/yr)	Potential Dichlorobenzene (tons/yr)
PE1-PE22, PE-30, and PE62-PE65	Non Chromium Electroplating	0.00	2.83	0.00	0.00	0.043	0.00	0.00	0.00	0.00	0.00
E4,F1,G1,H1,I1-I4,J1-J5,K1,L1-L4,M1,PE61	Combustion Units (Internal Combustion Engine and Space Heaters)	0.0002	0.0001	0.0001	0.005	0.00003	0.123	0.0001	0.00003	0.0001	0.0001
PE26 and PE27	woodworking	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Overall Totals	**0.00**	**2.83**	**0.00**	**0.005**	**0.043**	**0.123**	**0.00**	**0.00**	**0.00**	**0.00**
	Combined HAPs	**3.00**									

HAPs: Controlled Potential Emissions

Unit ID	Process	Potential Toluene (tons/yr)	Potential Nickel (tons/yr)	Potential Chromium (tons/yr)	Potential Formaldehyde (tons/yr)	Potential Lead (tons/yr)	Potential Hexane (tons/yr)	Potential Cadmium (tons/yr)	Potential Manganese (tons/yr)	Potential Benzene (tons/yr)	Potential Dichlorobenzene (tons/yr)
PE1-PE22, PE-30, and PE62-PE65	Non Chromium Electroplating	0.00	0.002	0.00	0.00	0.018	0.00	0.00	0.00	0.00	0.00
A1-A10,B1,C1-C28,D1,E1-E4,F1,G1,H1,I1-I4,J1-J5,K1,L1-L4,M1,PE61	Combustion Units (Internal Combustion Engine and Space Heaters)	0.0002	0.0001	0.0001	0.005	0.00003	0.123	0.0001	0.00003	0.0001	0.0001
PE26 and PE27	woodworking	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Overall Totals	**0.0002**	**0.002**	**0.0001**	**0.005**	**0.018**	**0.123**	**0.0001**	**0.00003**	**0.0001**	**0.0001**
	Combined HAPs	**0.149**									