TO: Interested Parties / Imagineering Solutions LLC, d/b/a
Imagineering Finishing Technologies - Indianapolis

RE: Imagineering Finishing Technologies - Indianapolis / 097-21981-00572

FROM: Felicia A. Robinson
Administrator
Office of Environmental Services
City of Indianapolis

Notice of Decision – Approval

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to 326 IAC 2, this approval was effective immediately upon submittal of the application.

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

(1) the date the document is delivered to the Office of Environmental Adjudication (OEA);

(2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or

(3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

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

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

If you have technical questions regarding the enclosed documents, please contact the Indianapolis Office of Environmental Services, Air Permits at (317) 327-2234.

Enclosures

Department of Public Works
Office of Environmental Services
2700 Belmont Avenue
Indianapolis, IN 46221
317-327-2234
Fax 327-2274
TDD 327-5186
indygov.org/dpw

Certified Mail #: 7000 0600 0023 5186 3597

February 6, 2007

Ms. Nancy M. Norton
Compliance Manager
Imagineering Solutions LLC
1302 W. Sample Street
South Bend, IN 46619

Dear Ms. Norton:

Re: Imagineering Finishing Technologies - Indianapolis
Exempt Construction and Operation Status,
097-21981-00572.

The application from Imagineering Solutions LLC, d/b/a Imagineering Finishing Technologies - Indianapolis received on July 22, 2005 and deemed administratively complete on September 28, 2006, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-1.1-3, it has been determined that the following operation of metal electroless and chromate conversion processes plating, to be located 2719 North Emerson Street, Indianapolis, Indiana, 46218, is classified as exempt from air pollution permit requirements. Additional information on the specifics of this determination, is provided in the Technical Support Document (TSD) and Attachment A (calculations).

The source will consist of and be permitted to construct and operate the following air emission units, processes and pollution control equipment:

(a) One (1) Process Plating A-Line, constructed in November 2006, consisting of :

(1) Nine (9) Aluminum Prep Line-Chromate Module open tanks, identified as A-2 through A-10, all exhausting to general ventilation or through a separate 36 inch circular stack if the tank is side-vented, designated as S-01. The Aluminum Prep Line-Chromate Module includes one (1) trivalent chromium in-process tank identified as A-5, which does not utilize an electroplating or electrolytic process, but it is driven without electricity by the chemistry of the immersion bath itself;

(2) Ten (10) Aluminum Prep Line open tanks, identified as A-11 through A-20, and exhausting to general ventilation, or through stack S-01 if tank is side vented. The Aluminum Prep Line tanks include one (1) Nitric Acid tank, (identified as A-11) and one (1) TRI-Acid tank, (identified as A-12), each tank with an acid fume scrubber, which exhaust to a separate 12-inch circular stack designated as S-02;

(3) Six (6) Electroless Nickel Plating Line open tanks, each tank identified as A-21 through A-26, which exhaust to general ventilation or stack S-01 if tank is side-vented;

(b) One (1) Process Plating B-Line, constructed in November 2006, consisting of:

(1) Thirteen (13) Stainless Steel/Steel/Copper Pretreatment Line open tanks, each tank identified as B-1 through B-5, B-7 through B-9, B-11 through B-15, and exhausting to general ventilation or to stack S-01, if a tank is side-vented;

Department of Public Works
Office of Environmental Services
2700 Belmont Avenue
Indianapolis, IN 46221
317-327-2234
Fax 327-2274
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indygov.org/dpw

(2) Two (2) Nickel Stripping Module open tanks, each tank identified as B-6 and B-10, and exhausting to general ventilation or to stack S-01, if a tank is side-vented;

(3) Five (5) Electroless Nickel Plating Line tanks, each tank identified as B-16 through B-20, and exhausting to general ventilation or to stack S-01, if a tank is side-vented;

(c) One (1) Cleaver Brooks natural gas fired boiler rated at 3.347 million British Thermal Units per hour (MMBtu/hr), identified as SB-01, and exhausting to a separate 24-inch round stack designated as S-03;

(d) One (1) Kewanee natural gas fired boiler rated at 2.65 MMBtu/hr per hour, identified as SB-02, and exhausting to a separate 24-inch round stack designated as S-04;

(e) One (1) King Air System (plant) Make-up air unit, identified as MU-1, fired by natural gas, with a capacity of 7.97 MMBtu/hr;

(f) Two (2) office heating air units, identified as OH-1 and OH-2, fired by natural gas, each with a capacity of 0.25 MMBtu/hr;

(g) One (1) electric dryer, identified as A-1;

(h) One (1) closed-loop steam-heated dryer, identified as A-27;

(i) One (1) electric curing oven, identified as OV-1, and exhausting to a 10-inch round stack designated as S-05;

(j) Six (6) cold cleaning portable degreasing tubs, without remote solvent reservoirs, utilizing Methyl Ethyl Ketone (MEK) as a solvent, and each tub identified as CT-01 through CT-06.

The following conditions shall be applicable:

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

(a) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4;

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 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.

(2) Pursuant to 326 IAC 6-2-4 (Particulate Emission Limitations for Sources of Indirect Heating), the two (2) boilers, Kewanee and Cleaver Brooks emission units (SB-01 and SB-02), One (1) King Air System (plant) Make-up air unit (MU-1) and the two (2) office heating air units (OH-1 and OH-2), constructed after September 21, 1983, must comply with this regulation.

The emission limitations are based on the following equation is given in 326 IAC 6-2-4:

$$Pt = 1.09/Q^{0.26}$$

where:

Pt = Pounds of particulate matter emitted per million British thermal units (lb/MMBtu) heat input;

Q = Total source maximum operating capacity rating in million British thermal units per hour (MMBtu/hr) heat input. The maximum operating capacity rating is defined as the maximum capacity at which the facility is operated or the nameplate capacity, which-ever is specified in the facility's permit application, except when some lower capacity is contained in the facility's operation permit; in which case, the capacity specified in the operation permit shall be used.

The total heat input capacity of the boilers (SB-01, SB-02), plant air make-up unit (MU-1), and office heating air units (OH-1, OH-2), is 14.48 MMBtu/hr. There were no combustion air emission units existing at this source, when these units were constructed.

Pursuant to 326 IAC 6-2-4(a), for Q less than 10 MMBth/hr, Pt shall not exceed 0.6. For Q greater than or equal to 10,000 MMBtu/hr, Pt shall not exceed 0.1 lb/MMBtu. Therefore, based on the equation above, the particulate matter (PM) emissions from each natural gas fired combustion air emission units aforementioned, are limited to 0.54 lb/MMBtu heat input.

(3) Pursuant to 326 IAC 6-4, the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate this regulation.

(4) Pursuant 326 IAC 8-3-2 (Cold Cleaner Operation), the six (6) cold cleaner solvent and degreasing tubs without remote solvent reservoirs must comply with the requirements of this regulation as follows:

(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.

(5) Pursuant 326 IAC 8-3-5(a) (Cold Cleaner Degreaser Operation and Control), the owner or operator of the six (6) cold cleaner solvent and degreasing tubs without remote solvent reservoirs, shall ensure that the following 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 (38EC) (one hundred degrees Fahrenheit (100EF));

(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 (38EC) (one hundred degrees Fahrenheit (100EF)), 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 (38EC) (one hundred degrees Fahrenheit (100EF)), or if the solvent is heated to a temperature greater than forty-eight and nine-tenths degrees Celsius (48.9EC) (one hundred twenty degrees Fahrenheit (120EF)):

(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.

(6) Pursuant to 326 IAC 8-3-5(b) (Cold Cleaner Degreaser Operation and Control), the owner or operator of the six (6) cold cleaner solvent and degreasing tubs without remote solvent reservoirs, 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.

(7) Pursuant to IAC 2, if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source, an authorized individual shall provide an application or notification. The application or notification shall be submitted to:

Indiana Department of Environmental Management (IDEM)
Office of Air Quality (OAQ)
Permits Branch
100 North Senate Avenue
Indianapolis, Indiana 46204-2251

and

Indianapolis Office of Environmental Management (OES)
Air Permits
2700 S. Belmont Avenue
Indianapolis, Indiana 46221

This Exemption is the first air approval issued to this source.

Sincerely,

Original signed by,

Felicia A. Robinson
Administrator

Enclosure: Technical Support Document (TSD) & Appendix A

FAR/cmb

cc: Mindy Hahn, IDEM, OAQ
Marion County Health Department
Matt Mosier, OES, Air Compliance
OES files (3)

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

Technical Support Document (TSD)
for New construction and Operation of an Exemption Source

Source Background and Description

Source Name:	**Imagineering Solutions, LLC, d/b/a Imagineering Finishing Technologies - Indianapolis**
Source Location:	**2719 North Emerson Avenue, Indianapolis, Indiana 46218**
County:	**Marion**
SIC Code:	**3471/3479**
Operation Permit No.:	**097-21981-00572**
Permit Reviewer:	**Carmen Bugay**

The Office of Air Quality (OAQ) has reviewed an application from Imagineering Solutions, LLC, d/b/a Imagineering Finishing Technologies - Indianapolis, hereby referred to as "source", relating to the operation of metal electroless and chromate conversion processes plating. The source is seeking construction and operation approval for a new site located in Marion County at 2719 North Emerson Street, Indianapolis, Indiana, 46218. This exemption contains provisions intended to satisfy the requirements of the construction and operation permit regulations.

Process Description

(a) Most of the plating processes utilized and located at Imagineering Finishing Technologies – Indianapolis, rely on the chemistry of the bath in the tanks themselves (i.e. by changing the composition of the substate through a conversion process, or chemically applying metal alloy deposits onto metallic substrates using an autocatalytic immersion process so that coatings form on the metal being processed), without the use of electrical current going to most of the process tanks. For some alloys however, (and intermittently utilized for the electroless nickel plating activities at Imagineering Finishing Technologies - Indianapolis), the pretreatment process employs the use of a cleaner tank (B-2) and initial nickel plating tank (i.e. nickel strike) B-13, which has an electrical current applied to the baths. (See the Federal Applicability and State Rule Applicability - Individual Facilities sections.)

Permitted Emission Units and Pollution Control Equipment

The source will consist of and be permitted to construct and operate the following air emission units, processes and pollution control equipment:

(a) One (1) Process Plating A-Line, constructed in November 2006, consisting of :

(1) Nine (9) Aluminum Prep Line-Chromate Module open tanks, each tank identified as A-2 through A-10, all exhausting to general ventilation or to a separate 36 inch circular stack if a tank is side-vented, designated as S-01. The Aluminum Prep Line-Chromate Module includes one (1) trivalent chromium in-process tank identified as A-5, which does not utilize an electroplating or electrolytic process, but it is driven without electricity by the chemistry of the immersion bath itself;

(2) Ten (10) Aluminum Prep Line open tanks, each tank identified as A-11 through A-20, and exhausting to general ventilation, or to stack S-01 if a tank is side vented. The Aluminum Prep Line tanks include one (1) Nitric Acid tank, (identified as A-11) and one (1) TRI-Acid tank, (identified as A-12), each tank with an acid fume scrubber, which exhaust to a separate 12-inch circular stack designated as S-02;

(3) Six (6) Electroless Nickel Plating Line open tanks, each tank identified as A-21 through A-26, which exhaust to general ventilation or through stack S-01 if a tank is side-vented;

(b) One (1) Process Plating B-Line, constructed in November 2006, consisting of:

(1) Thirteen (13) Stainless Steel/Steel/Copper Pretreatment Line open tanks, each tank identified as B-1 through B-5, B-7 through B-9, B-11 through B-15, and exhausting to general ventilation or to stack S-01, if a tank is side-vented;

(2) Two (2) Nickel Stripping Module open tanks, each tank identified as B-6 and B-10, and exhausting to general ventilation or to stack S-01, if a tank is side-vented;

(3) Five (5) Electroless Nickel Plating Line tanks, each tank identified as B-16 through B-20, and exhausting to general ventilation or to stack S-01, if a tank is side-vented;

(c) One (1) Cleaver Brooks natural gas fired boiler rated at 3.347 million British Thermal Units per hour (MMBtu/hr), identified as emission unit SB-01, and exhausting to a separate 24-inch round stack, designated as S-03;

(d) One (1) Kewanee natural gas fired boiler rated at 2.65 MMBtu/hr, identified as emission unit SB-02, and exhausting to a separate 24-inch round stack designated as S-04;

(e) One (1) King Air System (plant) Make up air unit, identified as MU-1, fired by natural gas, with a capacity of 7.97 MMBtu/hr;

(f) Two (2) office heating air units, identified as OH-1 and OH-2, fired by natural gas, each with a capacity of 0.25 MMBtu/hr;

(g) One (1) electric dryer, identified as A-1;

(h) One (1) closed-loop steam-heated dryer, identified as A-27;

(i) One (1) electric curing oven, identified as OV-1, and exhausting to a 10-inch round stack designated as S-05;

(j) Six (6) cold cleaning portable degreasing tubs, without remote solvent reservoirs, utilizing Methyl Ethyl Ketone (MEK) as a solvent, and each tub identified as CT-01 throughCT-06.

Unpermitted Emission Units and Pollution Control Equipment

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

Existing Approvals

This Exemption is the first air approval issued to the source.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (inches)	Flow Rate (cfm)	Temperature (EF)
Stack S-01	All shared/side-vented tanks except A-11 & A-12	8' above roof line	Round ,12"	21,729	Ambient
Stack S-02	Tanks A-11/A-12 - Scrubber	8' above roof line	Round, 36 "	2,022	Ambient
Stack S-03	Cleaver Brooks Boiler, SB-01, natural gas fired	8' above roof line	Round, 24"	--	Ambient
Stack S-04	Kewanee Boiler, SB-02, natural gas fired	8' above roof line	Round, 24"	--	Ambient
Stack S-05	Electric Curing Oven, OV-1	4' above roof line	Round, 10"	250 – 500	< 850° F

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Administrator that this Exemption be approved. This recommendation is based on the following facts and conditions:

An application was received on July 22, 2005. The application was deemed administratively complete on September 28, 2006, with additional information received on October 18 (site visit), November 22, 2005, June 12, August 15, August 16, August 18, August 21, August 22, August 23, August 29 (meeting), December 19, 2006, January 4, 2007, and January 25, 2007, and February 1, 2007.

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

Emission Calculations

The calculations submitted by the applicant have been verified and found to be accurate and correct. These calculations are provided in Appendix A, pages 1-10, of this TSD.

Potential to Emit of the Source Before Controls

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, inclulding 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/yr)
PM	0.120
PM-10	0.482
SO_2	0.038
VOC	2.329
CO	5.325
NO_x	6.418

Hazardous Air Pollutants (HAPs)	Potential to Emit (tons/yr)
HCL	0.091
HF	0.010
Highest Single HAP - Hexane	0.114
Combined HAPs	**0.221**

(a) The potential to emit (as defined in 326 IAC 2-7-1(29)) of regulated air pollutants are less than the levels listed in 326 IAC 2-1.1-3(e)(1). Therefore, the source is subject to the provisions of 326 IAC 2-1.1-3. An exemption will be issued.

(b) Fugitive Emissions
Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and 2-3, since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

County Attainment Status

The source is located in Marion County.

Pollutant	Status
PM-2.5	Non-attainment
PM-10	Attainment
SO_2	Maintenance attainment
NO_2	Attainment
8-hour Ozone	Basic non-attainment
CO	Attainment
Lead	Attainment

(b) Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to the ozone standards. Marion County has been designated as nonattainment for the 8-hour ozone standard. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3. See the State Rule Applicability - Entire Source section.

(c) Marion County has been classified as nonattainment for PM2.5 in 70 FR 943 dated January 5, 2005. Until U.S. EPA adopts specific New Source Review rules for PM2.5 emissions, it has directed states to regulate PM10 emissions as surrogate for PM2.5 emissions, pursuant to the Non-attainment New Source Review requirements. See the State Rule Applicability - Entire Source section.

(d) Marion County has been classified as attainment or unclassifiable in Indiana for PM10, SO_2, NO_2, CO, and Lead. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability - Entire Source section.

(e) On October 25, 2006, the Indiana Air Pollution Control Board finalized a rule revision to 326 IAC 1-4-1 redesignating Delaware, Greene, Jackson, Vanderburgh, Vigo and Warrick Counties to attainment for the eight-hour ozone standard, redesignating Lake County to attainment for the sulfur dioxide standard, and revoking the one-hour ozone standard in Indiana.

Source Status

New source PSD, Emission Offset, Part 70, or FESOP Definition (emissions after controls, based on 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/yr)
PM	Less than 250
PM-10	Less than 100
SO_2	Less than 250
VOC	Less than 100
CO	Less than 250
NO_x	Less than 100
Single HAP	Less than 10
Combined HAPs	Less than 25

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

(b) This new source is not a major stationary source because no non-attainment regulated pollutant is emitted at a rate of 100 tons per year or greater and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

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

(a) each criteria pollutant is less than 100 tons per year;

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

(c) any combination of HAP is less than 25 tons per year.

This status is based on this permit application and review.

Federal Rule Applicability

(a) Each natural gas fired combustion air emission unit (SB-01, SB-02, MU-1, OH-1, and OH-2) total heat input capacity, is less than ten (10) million British thermal units per hour (MMBtu/hr). Therefore, the requirements of New Source Performance Standard (NSPS) 40 CFR Part 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial - Institutional Steam Generating Units, are not being included in this Exemption.

(b) The requirements of 40 CFR 60.110b, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced After July 23, 1984, are not included in this Exemption, because the storage vessels at this source have capacities less than forty (40) cubic meters. In addition, all significant tanks are process tanks, not storage tanks.

(c) There are no other NSPS (40 CFR Part 60 and 326 IAC 12) included in this Exemption.

(d) The cold cleaners do not use halogenated solvents. Therefore, the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPs), Part 63, Subpart T, Emission Standards for Halogenated Solvent Cleaning, are not incorporated into this Exemption.

(e) The acid pickling operations does not generate hazardous air pollutants (HAPs), above minimum required thresholds, and therefore the source does not meet the definition of a major source under 40 CFR Part 63, Subpart CCC, National Emission Standards for Hazardous Air Pollutants for Steel Pickling, HCl Process Facilities and Hydrochloric Acid Regeneration Plants Source. Thus the requirements of this regulation are not included in this Exemption.

(f) 40 CFR 63, Subpart N, National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing tanks is not included in this Exemption, based on the following:

(1) The Chromate Module process works by changing the composition of the substate through a conversion process which relies on the chemistry of the bath in the tanks themselves without the use of electrical current, so that coatings form on the metal being processed. The trivalent chrome process tank A-5 does not use electrical current. Therefore, this tank does not meet the regulatory definition of electroplating, and the NESHAP 40 CFR 63, Subpart N, is not included in this Exemption.

(2) The Nickel plating process works mostly by chemically applying metal alloy deposits onto metallic substrates utilizing an autocatalytic immersion process so that coatings form on the metal being processed, without the use of electrical current. Since no electrical current is utilized, this part of the process does not meet the regulatory definition of electroplating, under the above NESHAP.

However, as an intermittent pretreatment process for electroless nickel plating, some alloys utilized do employ the use of a cleaner tank (B-2) and initial nickel plating tank (i.e. nickel strike) B-13, which have an electrical current applied to the baths. Tanks B-2 and B-13 do not meet the regulatory definition of decorative electroplating. In addition, only chrome plating is regulated (not nickel); therefore, the NESHAP 40 CFR 63, Subpart N, is not included in this Exemption.

(g) There are no other NESHAPs (326 IAC 14, 20, 40 CFR Part 61, 63) included in this Exemption.

State Rule Applicability - Entire Source

326 IAC 2-1.1-3 (Exemptions)

This source has the potential to emit (PTE) less than one (1) ton per year (tpy) of a single hazardous air pollutant (HAP), or two and one-half (2 1/2) tpy of any combination of HAPs. All other regulated pollutants are below the regulatory thresholds mentioned in 326 IAC 2-1-3 (e)(1). Therefore, this source is not required to apply for and obtain a registration or permit, and is exempt from construction and operation requirements.

326 IAC 2-1.1-5 (Non-attainment New Source Review)

This source is not major under nonattainment NSR because it has the potential to emit less than 100 tons of PM-10 (as surrogate for PM2.5). Therefore, the Non-attainment New Source Review requirements are not applicable.

326 IAC 2-2 (Prevention of Significant Deterioration (PSD) Requirements)

This source is not major because the emissions are less than the PSD major source levels. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.

326 IAC 2-3 (Emission Offset)

This source is not major because the emissions are less than the Emission Offset major source levels. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants - New source toxics control)

This source is not a major source of HAPs, and will emit less than ten (10) tons per year of a single HAP or twenty-five (25) tons per year of a combination of HAPs, therefore 326 IAC 2-4.1 does not apply.

326 IAC 2-5.1-1 (Construction of New Sources - Exemptions)

This is a new source that meets the criteria under 326 IAC 2-1.1-3, and therefore is exempt under this rule.

326 IAC 2-5.5-1 (Registrations)

Even though the source uses a trivalent chromium bath which incorporates a wetting agent in its plating processes, it does not utilize electricity (this process is "electroless"), but rather utilizes the chemistry of the bath itself to plate a variety of metals. In addition, this source does not meet the definition of hard or decorative chromium electroplating, and their PTE is below threshold levels. Therefore this source is not subject to this regulation or 326 IAC 20-8. Thus, an exemption will be issued.

326 IAC 2-6 (Emission Reporting)

This source is not located in Lake or Porter Counties, is not subject to a Part 70 Permit program, and the potential to emit of VOC and NOx is less than twenty-five (25) tons per year. Therefore, 326 IAC 2-6 is not included in this permit.

326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of thirty 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 6-4 (Fugitive Dust Emissions Limitations)

Pursuant to 326 IAC 6-4, the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate this regulation.

326 IAC 6-5.1-1 (Particulate Matter Limitations except Lake County)

Although the source is located in Marion County, it does not have the potential to emit 100 tons per year or greater of particulate matter; and/or actual emissions of 10 tons or more per year of particulate matter. In addition, the source has combustion units that burn only natural gas, and is not one of the sources listed in 326 IAC 6.5-6 (formerly 326 IAC 6-1-12), therefore 326 IAC 6.5-1-1 (formerly 6-1), does not apply.

State Rule Applicability - Individual Facilities

326 IAC 6-2-4 (Particulate Emission Limitations for Sources of Indirect Heating)

The two (2) boilers, Kewanee and Cleaver Brooks emission units (SB-01 and SB-02), One (1) King Air System (plant) Make-up air unit (MU-1) and the two (2) office heating air units (OH-1 and OH-2), constructed after September 21, 1983, must comply with this regulation.

The emission limitations are based on the following equation is given in 326 IAC 6-2-4:

$$Pt = 1.09/Q^{0.26}$$

where:

Pt = Pounds of particulate matter emitted per million British thermal units (lb/MMBtu) heat input;

Q = Total source maximum operating capacity rating in million British thermal units per hour (MMBtu/hr) heat input. The maximum operating capacity rating is defined as the maximum capacity at which the facility is operated or the nameplate capacity, whichever is specified in the facility=s permit application, except when some lower capacity is contained in the facility=s operation permit; in which case, the capacity specified in the operation permit shall be used.

The total heat input capacity of the boilers (SB-01, SB-02), plant air make-up unit (MU-1), and office heating air units (OH-1, OH-2) is 14.48 MMBtu/hr. There were no combustion air emission units existing at this source, when these units were constructed.

Pursuant to 326 IAC 6-2-4(a), for Q less than 10 MMBth/hr, Pt shall not exceed 0.6. For Q greater than or equal to 10,000 MMBtu/hr, Pt shall not exceed 0.1 lb/MMBtu. Therefore, based on the equation above, the particulate matter (PM) emissions from each natural gas fired combustion air emission units aforementioned, are limited to 0.54 lb/MMBtu heat input.

Based on AP-42 emission factors, the PM emissions are as follows:

1.9 lb PM /mmcf x 1 mmcf/1,000 MMBtu = 0.0019 lb PM/MMBtu

Therefore, each natural gas fired combustion air emission unit will be able to comply with this rule.

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

Pursuant to 326 IAC 6-3-1(b)(1), combustion processes for indirect heating are exempt under this rule.

326 IAC 8-1-1 (Volatile Organic Compound Rules)

This source is a new source and is built after January 1, 1980; however, it has no individual facility (refers to individual emission unit) where the potential to emit (PTE) is greater than or equal to twenty-five (25) tons per year (tpy) of VOCs.

The six (6) cold cleaner solvent degreasers tubs are each subject to the requirements of 326 IAC 8-3, Organic Solvent Degreasing Operations. Therefore, the requirements of 326 IAC 8-1-6 are not included in this Exemption.

326 IAC 8-2-1 (Surface Coating Emission Limitations)

Pursuant to 326 IAC 8-2-1(a)(2), even though the source was constructed after January 1, 1980, it does not have the potential to emit (PTE) of 25 tpy or greater of VOC, nor actual emission of 15 lb/day before add on controls. Therefore, this rule is not included in this Exemption.

326 IAC 8-3 (Organic Solvent Degreasing Operations)

The source is a new facility after July 1, 1990, and performs organic solvent degreasing operations, as per 326 IAC 8-3-1(b) (2), therefore this regulation is applicable.

(a) The six (6) cold cleaner solvent and degreasing tubs are all cold cleaner degreasers without remote solvent reservoirs, located in Marion County. Therefore, the requirements of 326 IAC 8-3-2, Organic Solvent Degreasing Operations: Cold Cleaner Operation and 326 IAC 8-3-5, Organic Solvent Degreasing Operations: Cold Cleaner Degreaser Operation and Control are applicable to each cold cleaner solvent and degreasing tubs.

(1) Pursuant to 326 IAC 8-3-2 (Cold Cleaner Operations), for cold cleaning operations constructed after January 1, 1980, the Permittee 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.

(2) Pursuant to 326 IAC 8-3-5(a) (Cold Cleaner Degreaser Operation and Control), the owner or operator of the cold cleaner degreasers shall ensure that the following 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:

(i) 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 (38EC) (one hundred degrees Fahrenheit (100EF));

(ii) The solvent is agitated; or

(iii) 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 (38EC) (one hundred degrees Fahrenheit (100EF)), 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 (38EC) (one hundred degrees Fahrenheit (100EF)), or if the solvent is heated to a temperature greater than forty-eight and nine-tenths degrees Celsius (48.9EC) (one hundred twenty degrees Fahrenheit (120EF)):

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

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

(iii) 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.

(3) Pursuant to 326 IAC 8-3-5(b) (Cold Cleaner Degreaser Operation and Control), the owner or operator of the cold cleaning degreasers 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 8-6 (Organic Solvent Emission Limitations)

Even though the source is located in Marion County and utilizes organic solvents, it is not an existing source as of January 1, 1980; and the potential VOC emissions from this source are less than 100 tons per year. Therefore, pursuant to 326 IAC 8-6-1, this source is exempt from this regulation.

326 IAC 20-8-1 (Incorporation of NESHAP 40 CFR 63, Subpart N)

(a) The chromate conversion process is not subject to 326 IAC 20-8-1, because the plating process utilized differs from electroplating and does not utilize electricity. The electroless process depends on the chemistry of the bath itself to chemically change the substrate through chromate conversion or deposits on the metallic substrate. Therefore, tank A-5 which contains trivalent chromium and is part of the chromate conversion process does not meet the regulatory definition of electroplating under the above NESHAP.

(b) The Nickel plating process works mostly by chemically applying metal alloy deposits onto metallic substrates utilizing an autocatalytic immersion process so that coatings form on the metal being processed, without the use of electrical current. Since no electrical current is utilized, this part of the process does not meet the regulatory definition of electroplating, under the above NESHAP.

However, as an intermittent pretreatment process for electroless nickel plating, some alloys utilized do employ the use of a cleaner tank (B-2) and initial nickel plating tank (i.e. nickel strike) B-13, which have an electrical current applied to the baths. Tanks B-2 and B-13 do not meet the regulatory definition of decorative electroplating. In addition, only chrome plating is regulated (not nickel); therefore, the NESHAP 40 CFR 63, Subpart N, is not included in this Exemption.

Testing Requirements

There are no testing requirements for this source.

Conclusion

The construction and operation of this new metal plating and coating source shall be subject to the conditions described in this TSD and of the attached Exemption, 097-21981-00572.

Company Name: Imagineering Enterprises, Inc., d/b/a Imagineering Finishing Technologies - Indianapolis
Address City IN Zip: 2719 North Emerson, Indianapolis, IN 46218
Permit Number: 097-21981-00572
Permit Reviewer: Carmen Bugay
Date: 12/11/06

Emerson A Line Process Tanks

Open Tanks
A-6

INPUT DATA			RESULTS				
Item	Units	Quantity	Item	Units	Quantity HF	Quantity "Other"	Quantity Water
Fluoride in acid	% w/v	**0.064**					
"Other" in acid	% w/v	**6.29**	Surface loss	lb/h/sqft	0.000	0.000	0.146
Temperature	deg F	68	Total loss	lb/h	0.000	0.001	1.48
Exhaust rate	cfm/sqft	0	Exhaust conc.	ppmv	0.005	0.003	
Total air	acfm	**21729**		% by vol			1.72
Tank width	ft	**2.17**		tons/yr	**0.002**	0.003	
Tank length	ft	**4.67**				(Non-Haz)*	

Calcs for open tank			
sg	1.03356996		
%w/w Fluoride	0.062		*Worst case, if bath decomposes => ammonia cmpds. =>
%w/w "Other"	6.09		then "Other" emissions ≤ NOx
vp Fluoride	0.000843759		Small Fluoride component as if it's HF. HF is possible
vp HNO3/20	0.002178301	0.104108	decomposition product.
vp HNO3/30	0.023158565		
vp HNO3/40	0.078108408		
vp HNO3 act	0.000662825		vp "Other" estimated as sum, by similarity to NOx
temp K	293		
temp R	528		
vp water	17.46673786		
1-MR	0.944485616	"Other"	
vp sol'n	16.49708266		
Air vel	35.7364884		
Fluoride loss	0.000	per sq.ft	
"Other" loss	0.000	per sq.ft	
water loss	0.145605	per sq.ft	

ESTIMATION OF ACID LOSSES FROM NITRIC/HF PICKLING TANKS

Open Tanks
A-11

INPUT DATA			RESULTS				
Item	Units	Quantity	Item	Units	Quantity HF	Quantity HNO3	Quantity Water
HF in acid	% w/v	**0**					
HNO3 in acid	% w/v	**47.42**	Surface loss	lb/h/sqft	0.000	0.001	-0.009
Temperature	deg F	68	Total loss	lb/h	0.000	0.010	-0.10
Exhaust rate	cfm/sqft	0	Exhaust conc.	ppmv	0.000	1.000	
Total air	acfm	**1011**		% by vol			1.72
Tank width	ft	**2.167**		tons/yr	0.000	**0.043**	
Tank length	ft	**4.667**					

Calcs for open tank			
sg	1.251326		
%w/w HF	0		
%w/w HNO3	37.89580014		
vp HF	0		
vp HNO3/20	0.002178301		
vp HNO3/30	0.023158565		
vp HNO3/40	0.078108408		
vp HNO3 act	0.066545862		
temp K	293		
temp R	528		
vp water	17.46673786		
1-MR	0.658937799		
vp sol'n	11.5094938		
Air vel	1.666108166		
HF loss	0.000	per sq.ft	
HNO3 loss	0.001	per sq.ft	
water loss	-0.00949966	per sq.ft	

Methodology is the same as page 3.

Company Name: Imagineering Enterprises, Inc., d/b/a Imagineering Finishing Technologies - Indianapolis
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Permit Number: 097-21981-00572
Permit Reviewer: Carmen Bugay
Date: 12/11/06

Emerson Process A Line Tanks

Open Tanks
A-12 - including Sulfuric Acid calculation:

INPUT DATA			RESULTS					
Item	Units	Quantity	Item	Units	Quantity HF	Quantity HNO3	Quantity Water	Quantity H2SO4
HF in acid	% w/v	**0.945**						
HNO3 in acid	% w/v	**37.57**	Surface loss	lb/h/sqft	0.000	0.000	-0.005	0.000
HSO4 in acid	% w/v	**34.56**						
Temperature	deg F	68	Total loss	lb/h	0.001	0.004	-0.05	0.000
Exhaust rate	cfm/sqft	0	Exhaust conc.	ppmv	0.207	0.439		0.004
Total air	acfm	**1011**		% by vol			1.72	
Tank width	ft	**2.17**		tons/yr	**0.003**	**0.019**		**0.0002**
Tank length	ft	**4.67**						

Calcs for open tank	
sg	1.20834269
%w/w HF	0.782
%w/w HNO3	31.09
%w/w H2SO4	28.60
vp HF	0.01065664
vp HNO3/20	0.0021783
vp HNO3/30	0.02315856
vp HNO3/40	0.07810841
vp HNO3 act	0.02916004
vp H2SO4 est.	0.00026824
temp K	293.0
temp R	528
vp water	17.4667379
1-MR	0.70072894
vp sol'n	12.2394487
Air vel	1.6627360
HF loss	0.000
HNO3 loss	0.000
H2SO4 loss	0.000
water loss	-0.005112

Has very low vapor pressure compared to HNO3 or HF [~ 1Pa at 72°F for pure acid]. Used 1/100 of HN03 pressure prorated by relative wt. %.

per sq.ft
per sq.ft
per sq.ft.
per sq.ft

Methodology is the same as page 3.

Company Name: Imagineering Enterprises, Inc., d/b/a Imagineering Finishing Technologies - Indianapolis
Address City IN Zip: 2719 North Emerson, Indianapolis, IN 46218
Permit Number: 097-21981-00572
Permit Reviewer: Carmen Bugay
Date: 12/11/06

Methodology
No emission factors for metals in AP42, FIRE or SCC from metal plating
Molecular Diffusivity of HNO3 in Air (D HNO3) = D H2O x (Mw H2O/Mw HNO3)^0.5
Laminar Schmidt Number (Sc) = Kinematic Viscosity of Air (0.000015) / D HNO3
Mass Transfer Coefficient (Km) = 0.0048 x U^(7/9) x Z^(-1/9) x Sc^(-2/3)
Evaporation Rate = Surface Area of Tank x Km x (Mw HCl x Pv/(8314 J/kmolK) x (T+273.15))

Amount of Water (moles) = Capacity of Tank (gallons) x (Ratio of water to Nitric Acid/(Ratio of water to Nitric Acid + 1)) x Density of Water / pounds per mole of Water
Amount of Nitric Acid (moles) = Capacity of Tank (gallons) x 1/(Ratio of water to Nitric Acid + 1)) x Density of Nitric Acid / pounds per mole of Nitric Acid
Mole Fraction Nitric Acid = Amount of Nitric Acid/ (Amount of Water + Amount of Nitric Acid)
Emission rate (lbs/hr) = 0.000969 x (Vapor Pressure^(4/3) x Molecular Weight of Nitric Acid)^0.60327 x Mole Fraction x Surface Area of Nitric Acid in Tank

Assumptions for HNO3 and HF tanks- Evaporation into air at 60-80 deg F, 70%RH
Essentially atmospheric pressure
Either general building or lateral exhaust.
Less than 15% HF and/or 35% nitric

Calculation methodology - by Esco Engineering, Kingsville, Ontario - March 1993
For total emissions from OPEN tanks:
Based on either air flow per square foot of tank surface or the total rate and tank dimensions

CORRECTION FACTORS - Esco Engineering, Kingsville, Ontario - March 1993

The spreadsheet calculations give maximum values for emissions based on the assumptions, i.e.
- all air passes over the whole liquid surface
- air above the liquid contains no acid vapor
- air/acid vapor/water vapor are uniformly mixed

In practice, some air will short-circuit, and only pass over some of the surface, and the mixture will not be uniform.
Also, the evaporation into the air will reduce the rate of evaporation towards the outlet end of the air flow.
Calculations on the effect of the build-up of acid and water vapors in the air show that this introduces an error of less than 10% (high) in the estimate, for typical pickling conditions.
Comparison of estimated and measured values show that the estimates are fairly good for open tanks.
Uneven air flow, and incomplete mixing, in closed picklers, have quite a significant effect in reducing rates of evaporation.

General Assumptions;
Inorganic gases
Ammonia bifluoride will yield "some" hydrogen fluoride and/or fluoride
Fluoride gases from process lines - assumed to be equal to Hydrogen Fluoride value

Waste water treatment activities will be insignificant activities

Production Process
In general, Plating Job Shops - production based on Plating or Coating depletion of bath as opposed to pounds of alloy through the tanks
IFT has developed plating bath consumption rates (loss of nickel or coating, in pounds per hour) for the processes
IFT custom blends baths per customer demands and supplier recommendations.
IFT has calculated a therorical production process weight rate based on plating depletion and using the density of stainless steel (lbs/cu ft)

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Date: 12/11/06

Emerson Process B line Tanks:

ESTIMATION OF HCl LOSSES FROM PICKLING TANKS

Open Tanks
B-8

INPUT DATA			RESULTS			
Item	Units	Quantity	Item	Units	Quantity HCl	Quantity Water
HCl in acid	% w/v	**12.48**				
Fe in acid	% w/v	4.5	Surface loss	lb/h/sqft	0.001	0.021
Temperature	deg F	68	Total loss	lb/h	0.009	0.342
Exhaust rate	cfm/sqft	0	Exhaust conc.	ppmv	1	
Total air	acfm	**1630**		% by vol		1.73
Tank width	ft	**3.5**		ton/yr	**0.041**	
Tank length	ft	**4.67**				

Calcs for open tank					
sg	1.153	If use **optional** Etch Salts:			
%w/w acid	10.82	=>	**0.420 wt. %**	HF	
%w/w FeCl2	8.85	and	**10.37 wt. %**	HCl	
vp HCl	0.06	So, HCl would decrease, but HF increase.			
temp K	293	Assume effect of HF <		**0.006**	
vp water	17.47			ton/yr	
1-MR	0.95				
vp sol'n	16.56				
Air vel	1.66				
HCl loss	0.0006	per sq.ft			
water loss	0.02	per sq.ft			

ESTIMATION OF ACID LOSSES FROM NITRIC/HF PICKLING TANKS

Open Tanks
B-9

INPUT DATA			RESULTS				
Item	Units	Quantity	Item	Units	Quantity HF	Quantity HNO3	Quantity Water
HF in acid	% w/v	**0**					
HNO3 in acid	% w/v	**29.46**	Surface loss	lb/h/sqft	0.000	0.000	0.002
Temperature	deg F	68	Total loss	lb/h	0.000	0.003	0.04
Exhaust rate	cfm/sqft	0	Exhaust conc.	ppmv	0.000	0.206	
Total air	acfm	**1630**		% by vol			1.72
Tank width	ft	**3.5**		tons/yr	0.000	**0.014**	
Tank length	ft	**4.67**					

Calcs for open tank		
sg	1.156138	
%w/w HF	0	
%w/w HNO3	25.48	
vp HF	0	
vp HNO3/20	0.0021783	
vp HNO3/30	0.02315856	
vp HNO3/40	0.07810841	
vp HNO3 act	0.0136784	
temp K	293	
temp R	528	
vp water	17.4667379	
1-MR	0.77066752	
vp sol'n	13.4610475	
Air vel	1.6620781	
HF loss	0.000	per sq.ft
HNO3 loss	0.000	per sq.ft
water loss	0.002231	per sq.ft

Methodology is the same as page 6.

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Permit Number: 097-21981-00572
Permit Reviewer: Carmen Bugay
Date: 12/11/06

Emerson Process B line Tanks:

ESTIMATION OF ACID LOSSES FROM SULFURIC ACID/H2O2 TANKS

Open Tanks
B-10 - including Sulfuric Acid / Hydrogen Peroxide calculation:

INPUT DATA			RESULTS					
Item	Units	Quantity	Item	Units	Quantity H2O2	Quantity HNO3	Quantity Water	Quantity H2SO4
H2O2 in acid	% w/v	**1.945**						
HNO3 in acid	% w/v	**0.00**	Surface loss	lb/h/sqft	0.006	0.000	0.013	0.000
HSO4 in acid	% w/v	**18.362**						
Temperature	deg F	68	Total loss	lb/h	0.097	0.000	0.22	0.001
Open Tanks	cfm/sqft	0	Exhaust conc.	ppmv	40.961	0.000		0.090
Total air	acfm	**766**		% by vol			1.73	
Tank width	ft	**3.5**		tons/yr	**0.426**	**0.000**		**0.0029**
Tank length	ft	**4.67**						

Calcs for open tank

sg	1.09015	Estimated from weight of mixtures, 20° C
%w/w H2O2	1.784	%w/w Water = 81.372
%w/w HNO3	0.00	
%w/w H2SO4	16.844	
vp H2O2	1.17245	VP of 1.784 %(wt) would certainly be less than VP 35%; prorated.
vp HNO3 act	N/A	
vp H2SO4 est.	0.00362	Has very low vapor pressure compared to HNO3 or HF. [~ 1Pa at 72°F for pure acid] Estimated less than 1/1000 that of water. At 294.8° F, VP of H2SO4 = 1 mm Hg; VP of water = 44,000 mm Hg.
temp K	293.0	
temp R	528	
vp water	17.4667379	
1-MR	0.8994254	
vp sol'n	15.7100277	
Air vel	0.7810747	
H2O2 loss	0.005952	per sq.ft
HNO3 loss	0.00	per sq.ft
H2SO4 loss	0.000041	per sq. ft.
water loss	0.013295	per sq.ft

ESTIMATION OF HCl LOSSES FROM PICKLING TANKS

Open Tanks
B-13

INPUT DATA			RESULTS			
Item	Units	Quantity	Item	Units	Quantity HCl	Quantity Water
HCl in acid	% w/v	**8.96**				
Fe in acid	% w/v	4.5	Surface loss	lb/h/sqft	0.001	0.079
Temperature	deg F	68	Total loss	lb/h	0.011	1.662
Exhaust rate	cfm/sqft	0	Exhaust conc.	ppmv	0	
Total air	acfm	**21729**		% by vol		1.73
Tank width	ft	**4.5**		ton/yr	**0.050**	
Tank length	ft	**4.67**				

Calcs for open tank

sg	1.15	
%w/w acid	7.82	Assumed General ventilation is less than total for both lines, 21,504 cfm.
%w/w FeCl2	8.90	
vp HCl	0.02	
temp K	293	
vp water	17.47	
1-MR	0.95	
vp sol'n	16.56	
Air vel	17.23	
HCl loss	0.0005	per sq.ft
water loss	0.08	per sq.ft

Methodology is the same as page 6.

Appendix A: Emission Calculations
Process B-Line Tank Emissions

Company Name: Imagineering Enterprises, Inc., d/b/a Imagineering Finishing Technologies - Indianapolis
Address City IN Zip: 2719 North Emerson Street, Indianapolis, IN 46218
Permit Number: 097-21981-00572
Permit Reviewer: Carmen Bugay
Date: 12/11/06

Methodology

No emission factors for metals in AP42, FIRE or SCC from metal plating
Molecular Diffusivity of HNO_3 in Air (D HNO_3) = D H_2O x (Mw H_2O/Mw HNO_3)^0.5
Laminar Schmidt Number (Sc) = Kinematic Viscosity of Air (0.000015) / D HNO_3
Mass Transfer Coefficient (Km) = 0.0048 x U^(7/9) x Z^(-1/9) x Sc^(-2/3)
Evaporation Rate = Surface Area of Tank x Km x (Mw HCl x Pv/(8314 J/kmolK) x (T+273.15))

Amount of Water (moles) = Capacity of Tank (gallons) x (Ratio of water to Nitric Acid/(Ratio of water to Nitric Acid + 1)) x Density of Water / pounds per mole of Water
Amount of Nitric Acid (moles) = Capacity of Tank (gallons) x 1/(Ratio of water to Nitric Acid + 1)) x Density of Nitric Acid / pounds per mole of Nitric Acid
Mole Fraction Nitric Acid = Amount of Nitric Acid/ (Amount of Water + Amount of Nitric Acid)
Emission rate (lbs/hr) = 0.000969 x (Vapor Pressure^(4/3) x Molecular Weight of Nitric Acid)^0.60327 x Mole Fraction x Surface Area of Nitric Acid in Tank

Assumptions for HNO3 and HF tanks- Evaporation into air at 60-80 deg F, 70%RH
Essentially atmospheric pressure
Either general building or lateral exhaust.
Less than 15% HF and/or 35% nitric

Calculation methodology - by Esco Engineering, Kingsville, Ontario - March 1993
For total emissions from**OPEN** tanks:
Based on either air flow per square foot of tank surface or the total rate and tank dimensions

CORRECTION FACTORS- Esco Engineering, Kingsville, Ontario - March 1993

The spreadsheet calculations give maximum values for emissions based on the assumptions, i.e.
- all air passes over the whole liquid surface
- air above the liquid contains no acid vapor
- air/acid vapor/water vapor are uniformly mixed

In practice, some air will short-circuit, and only pass over some of the surface, and the mixture will not be uniform.
Also, the evaporation into the air will reduce the rate of evaporation towards the outlet end of the air flow.

Calculations on the effect of the build-up of acid and water vapors in the air show that this introduces an error of less than 10% (high) in the estimate, for typical pickling conditions.

Comparison of estimated and measured values show that the estimates are fairly good for open tanks.
Uneven air flow, and incomplete mixing, in closed picklers, have quite a significant effect in reducing rates of evaporation.

General Assumptions;

Inorganic gases
Ammonia bifluoride will yield "some" hydrogen fluoride and/or fluoride
Fluoride gases from process lines - assumed to be equal to Hydrogen Fluoride value

Waste water treatment activities will be insignificant activities

Production Process

In general, Plating Job Shops - production based on Plating or Coating depletion of bath as opposed to pounds of alloy through the tanks
IFT has developed plating bath consumption rates (loss of nickel or coating, in pounds per hour) for the processes
IFT custom blends baths per customer demands and supplier recommendations.
IFT has calculated a therorical production process weight rate based on plating depletion and using the density of stainless steel (lbs/cu ft)

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

Company Name: Imagineering Solutions, LLC, d/b/a Imagineering Finishing Technologies - Indianapolis
Address City IN Zip: 2719 North Emerson, Indianapolis, IN 46218
Permit Number: 097-21981-00572
Reviewer: Carmen Bugay
Date: 12/11/2006

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
6.00	52.5

Emission Units (EU): SB-01(Kewanee); SB-02 (Cleaver Brooks)

	Pollutants				
	PM*	**PM10***	**SO2**	**NOx**	**VOC**
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5
Potential Emission in tons/yr	**0.050**	**0.200**	**0.016**	**2.627**	**0.144**

*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

Hazardous Air Pollutants (HAPs) Emissions

Emission Units (EU): SB-01(Kewanee); SB-02 (Cleaver Brooks)

	HAPs - Organics				
	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03
Potential Emission in tons/yr	**0.000**	**0.000**	**0.002**	**0.047**	**0.000**

	HAPs - Metals				
	Lead	Cadmium	Chromium	Manganese	Nickel
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03
Potential Emission in tons/yr	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

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

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

CO
84.0
2.206

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

Company Name: Imagineering Solutions, LLC, d/b/a Imagineering Finishing Technologies - Indianapolis
Address City IN Zip: 2719 North Emerson, Indianapolis, IN 46218
Permit Number: 097-21981-00572
Reviewer: Carmen Bugay
Date: 12/11/2006

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
Emission Units (EU): MU-1, OH-1 & OH-2	
8.48	74.2

	Pollutants				
	PM*	**PM10***	**SO2**	**NOx**	**VOC**
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5
Potential Emission in tons/yr	**0.071**	**0.282**	**0.022**	**3.712**	**0.204**

*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

Hazardous Air Pollutants (HAPs) Emissions

Emission Units (EU): MU-1, OH-1, OH-2

	HAPs - Organics				
	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03
Potential Emission in tons/yr	**0.000**	**0.000**	**0.003**	**0.067**	**0.000**

	HAPs - Metals				
	Lead	Cadmium	Chromium	Manganese	Nickel
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03
Potential Emission in tons/yr	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

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

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

CO
84.0
3.118

Appendix A: Emission Calculations
Degreasing Operations - VOC Emissions

Company Name: Imagineering Solutions, LLC, d/b/a Imagineering Finishing Technologies - Indianapolis
Address City IN Zip: 2719 North Emerson, Indianapolis, IN 46218
Permit Number: 097-21981-00572
Permit Reviewer: Carmen Bugay
Date: 12/11/06

Emission Units: CT-01 through CT-06.
(Cold Cleaning portable tubs without remote solvent reservoirs, utilizing MEK as a solvent.)

Type of Degreasing - Cold Cleaner:			
Uncontrolled Emission Factor* =		0.33	tons per year/unit
Number of units - Emerson		6	
	VOCs Cold Cleaning	1.98	tons per year
		2000	lbs / ton
		3960	lbs per year VOCs Cold Cleaning (estimate)

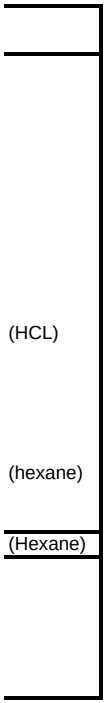
Methodology
*Emission factor is from AP 42, Chapter 4.6, Solvent Degreasing, Table 4.6-2.

Company Name: Imagineering Solutions, LLC, d/b/a Imagineering Finishing Technologies - Indianapolis
Address City IN Zip: 2719 North Emerson, Indianapolis, IN 46218
Permit Number: 097-21981-00572
Permit Reviewer: Carmen Bugay
Date: 12/11/06

Potential to Emit (PTE) in tons per year (tpy)

Processes		HCL	HF	VOC	PM	PM10	NOx	CO	SOx	Comb.HAPS*	Single HAP
Line A	(Inorganic Gases, HAPS, RAPS)										
	Tank A-6		0.002				0.003			0.002	
	Tank A-11		0.000				0.043			0.000	
	Tank A-12		0.003				0.019			0.003	
Line B	(Inorganic Gases, HAPS, RAPS)										
	Tank B-8	0.041	0.006							0.047	
	Tank B-9		0.000				0.014			0.000	
	Tank B-10 *						0.000				
	Tank B-13	0.050								0.050	0.091
Cold Cleaning (part washing) (CT-01 through CT-06)	VOCs			1.980							
Combuston -Natural Gas (SB-01, SB-02, MU-1, OH-1, OH-2)				0.349	0.120	0.482	6.339	5.325	0.038	0.120	0.114
	Total tons/yr PTE	**0.091**	**0.010**	**2.329**	**0.120**	**0.482**	**6.418**	**5.325**	**0.038**	**0.221**	**0.114**

Notes: Assumed Emissions from Nitric Acid Process Plating and B-10* baths.
*B-10 is a maintenance tank for the removal of material from the plating racks and correction of manufacturing mistakes.
tank is kept covered when not in use. AssumedEmissions from Nitric Acid Process Plating and B-10* baths.


(HCL)
(hexane)
(Hexane)