

PERMIT BOOK

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **112013-008** Project Number: 2012-12-001
Installation Number: 095-0214

Parent Company: De Tray Plating Works, Inc.

Parent Company Address: 10405 East 11th Street, Independence, MO 64052

Installation Name: De Tray Plating Works, Inc.

Installation Address: 10405 East 11th Street, Independence, MO 64052

Location Information: Jackson County, S4, T49N, R32W

Application for Authority to Construct was made for:

The installation of an electroplating facility in Independence, Missouri. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

NOV 25 2013

EFFECTIVE DATE

A handwritten signature in cursive script, reading "Kyma L. Moore".

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

De Tray Plating Works, Inc.
Jackson County, S4, T49N, R32W

1. HAPs Emission Limitations
 - A. De Tray Plating Works, Inc. shall emit less than 0.01 tons of Cadmium metal in any consecutive 12-month period from their cadmium plating tanks (T-2 thru T-5).
 - B. De Tray Plating Works, Inc. shall emit less than 1.0 ton of Nickel metal in any consecutive 12-month period from their nickel plating tanks (T-6 and T-7).
 - C. De Tray Plating Works, Inc. shall emit less than 10.0 tons Hydrogen Chloride in any consecutive 12-month period from their four HCL tanks (T-15 thru T-18).
 - D. Attachment A, Attachment B and Attachment C or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 1.A, 1.B, and 1.C.
2. Control Requirement-Fume Suppressant
 - A. De Tray Plating Works, Inc. shall control emissions from the decorative chrome plating tank using a fume suppressant as specified in the permit application.
 - B. The fume suppressant shall be used in accordance with manufactures specifications and 40 CFR Part 63, Subpart N, *National Emission Standards for Chromium Emissions From Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks*.
 - C. De Tray Plating Works, Inc. shall maintain a copy of the fume suppressant manufacturer's specifications on site.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- D. De Tray Plating Works, Inc. shall maintain an operating and maintenance log for the fume suppressant system which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
3. Operational Requirement – Plating Solutions and Acids
De Tray Plating Works, Inc. shall keep all plating solutions and acids in sealed containers whenever the materials are not in use. De Tray Plating Works, Inc. shall provide and maintain suitable, easily read, permanent markings on all plating solutions and acid containers used with this equipment.
4. Operational Requirement – HCL Tank Covers
De Tray Plating Works, Inc. shall install covers on their hydrochloric acid tank T-15 thru T-18 such that the covers can be removed while the facility is in operation and covered when the facility is shutdown.
5. Operational Requirement – Amp/Hour Meters
 - A. De Tray Plating Works, Inc. shall install amp-hour meters on the rectifiers of the following plating tanks.
 - 1) Cadmium Plating Tank (T-2)
 - 2) Cadmium Plating Tank (T-3)
 - 3) Cadmium Plating Tank (T-4)
 - 4) Cadmium Plating Tank (T-5)
 - 5) Nickel Plating Tank (T-6)
 - 6) Nickel Plating Tank (T-7)
6. Record Keeping and Reporting Requirements
 - A. De Tray Plating Works, Inc. shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include MSDS for all materials used.
 - B. De Tray Plating Works, Inc. shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2012-12-001
Installation ID Number: 095-0214
Permit Number:

De Tray Plating Works, Inc.
10405 East 11th Street
Independence, MO 64052

Complete: December 3, 2013

Parent Company:
De Tray Plating Works, Inc.
10405 East 11th Street
Independence, MO 64052

Jackson County, S4, T49N, R32W

REVIEW SUMMARY

- De Tray Plating Works, Inc. has applied for authority to install an electroplating facility in Independence, Missouri.
- HAP emissions are expected from the proposed equipment. HAPs of concern from this process are hexavalent chromium compounds, nickel compounds, cadmium compounds and hydrogen chloride.
- None of the New Source Performance Standards (NSPS) apply to the installation.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) apply to this installation.
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart N, *National Emission Standards for Chromium Emissions From Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks* applies the chromium plating tanks at this facility. MACT standard, 40 CFR Part 63, Subpart WWWW, *National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Plating and Polishing Operations*, applies to the cadmium and nickel plating tanks at this facility.
- A fume suppressant is being used to control the hexavalent chromium compound emissions from the decorative chromium plating operation in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of combined and individual HAPs are conditioned below major source levels.
- This installation is located in Jackson County, a maintenance area for ozone and an attainment area for all other criteria pollutants.

- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.
- Ambient air quality modeling was not performed since potential emissions of the application are conditioned below the SMAL and HAP major source levels.
- Emissions testing are not required for the equipment.
- De Tray Plating Works, Inc. is not required to get an operating permit.
- Approval of this permit is recommended with special conditions.

INSTALLATION/PROJECT DESCRIPTION

De Tray Plating Works, Inc. (De Tray) is an electroplating facility that will be located at 10405 East 11th Street in Independence, Missouri (S4, T49N, R32W). De Tray is relocating the facility due to a building fire at their previous location. Therefore an application for authority to construct was necessary for their new facility. De Tray processes include receiving metal items including, but not limited to, fasteners, springs, hinges and small metal parts, cleaning the metal item using a series of soap, water and hydrochloric acid (HCL) baths and plating the metal items with new materials such as cadmium, zinc, copper, nickel and chromium. De Tray also has a 1.3 MMBtu/hr natural gas fired boiler (B-1) for process steam.

The cleaning process begins with a series of soap baths and steam to clean and remove dirt, oil and grease from the metal items prior to electroplating and/or striking process. De Tray does not use any solvents, flammables or oil-based cleaning agents. Some metal items may also be cleaned with one of the four hydrochloric acid (HCL) tanks (T-15 thru T-18) to remove any scale, rust and other foreign matter prior to electroplating. Acid cleaning/etching is used prior to electrolytic and electroless plating to remove any metal oxides from the surface of the substrate metal and provide a more active and rougher surface to which the plated materials can better adhere.

After the cleaning process, De Tray begins the plating process. De Tray has the capability to conduct decorative chromium plating, cadmium plating, nickel plating/striking, zinc plating and copper plating/striking. Currently there is one decorative chromium plating tank (T-1), four cadmium plating tank (T-2 thru T-5), two nickel plating tanks (T-6 and T-7), two copper plating tanks (copper sulfate T-8 and copper cyanide T-9) and five zinc plating tanks (T-10 thru T-14). The maximum amperage usage of each plating tank is 2000 amps per tank. The decorative chrome plating tank is controlled by a fume suppressant to reduce the chromium emissions from that process. During the plating process, De Tray uses a water or steam rinse after each step in the plating process to prevent any chemical contamination between steps. Contamination can lead to premature replacement of the chemicals at each step of the process.

EMISSIONS/CONTROLS EVALUATION

The particulate matter emission factors and particle size distribution used in this analysis for the decorative chrome plating (T-1), cadmium plating (T-2 thru T-5), nickel plating (T-6 and T-7), copper plating (T-8 and T-9) and zinc plating (T-10 thru T-14) were obtained from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 12.20 Electroplating* (July 1996), SCC 3-09-010-28.

According to AP-42, most of the chromium emissions from decorative chrome plating are hexavalent chromium. For this project all chromium emissions were considered hexavalent chromium. Potential emissions of hexavalent chromium were calculated using percent mass of the metal portion of the compound to the respective compound mass, multiplied by the total compound emission rate. According to MACT Subpart N §63.342(d)(1) the total chromium emission standard for decorative chrome electroplating using a chromic acid bath and chromium anodizing tanks is 3.1×10^{-6} gr/dscf of total chromium compounds. This emission rate is a controlled emission rate and was considered the total chromium compound emission rate. For hexavalent chromium the total mass of the compound is used to determine emissions for comparison to the major source thresholds. The mass of the metal portion of the compound is used to determine emissions for comparison to the SMALs.

As mentioned above the particulate matter emission rate, or the metal portion of the nickel and cadmium emission rate, was calculated using the emission factors found in AP-42. The total nickel and cadmium compound emission rates were calculated using the percent mass of the total compound to the respective mass of the metal portion of the compound, multiplied by the metal portion emission rate. For cadmium and nickel compounds, the total mass of the compound is used to determine emissions for comparison to the major source thresholds. The mass of the metal portion of the compound is used to determine emissions for comparison to the SMALs.

The emission factors used in this analysis for the natural gas fired boiler (B-1) were obtained from AP-42, Section 1.4, *Natural Gas Combustion* (July 1998), SCC 1-01-006-02.

The potential emissions from the four HCL tanks (T-15 thru T-18) were calculated using the formula from *Estimating Releases and Waste Treatment Efficiencies for the TRI Form*, EPA-560/4-888-002. The evaporation rate was calculated and assumed to be equal the potential emission rate for these emission points. De Tray is required to install covers on their HCL tanks and HCL emissions are not expected when the tanks are covered.

The following table provides an emissions summary for this project. There are no existing potential emissions for this facility and this is considered a new facility. Existing actual emissions were taken from the installation's last EIQ submitted in 2001. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year). De Tray is taking a voluntary limit to below 10.0 tons per year of hydrogen chloride to avoid being a major source for HAPs. De

Tray will track the number of hours the HCL tanks are uncovered to determine the actual emissions from this process. The HCL tanks will be allowed to have their HCL tanks uncovered for a maximum of 3,843 hours per year based on the 10.0 tons per year hydrogen chloride limit. The hydrogen chloride limit indirectly limits combined HAPs to below 25.0 tons per year. De Tray is also taking a voluntary limit to below the SMAL for Nickel metal and Cadmium metal to avoid HAP modeling requirements found in 10 CSR 6.060.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2001 EIQ)	Potential Emissions of the Application	New Installation Conditioned Potential
PM	25.0	N/A	N/D	4.44	3.68 ²
PM ₁₀	15.0	N/A	0.0093	2.65	2.20 ²
PM _{2.5}	10.0	N/A	N/D	2.17	1.80 ²
SO _x	40.0	N/A	0.0017	0.0032	N/A
NO _x	40.0	N/A	0.29	0.54	N/A
VOC	40.0	N/A	0.015	22.81	N/A
CO	100.0	N/A	0.061	0.45	N/A
GHG (CO ₂ e)	75,000 / 100,000	N/A	N/D	653.22	N/A
GHG (mass)	0.0 / 100.0 / 250.0	N/A	N/D	649.29	N/A
Combined HAPs	10.0/25.0	N/A	0.0003	30.09	N/A
Chromium 6 Compounds	10.0	N/A	N/D	1.15E-05	1.15E-05
Chromium 6 Metal	¹ 0.002	N/A	N/D	9.28E-06	9.28E-06
Cadmium Compounds	10.0	N/A	N/D	0.23	0.011
Cadmium Metal	¹ 0.01	N/A	N/D	0.20	< 0.01
Nickel Compounds	10.0	N/A	N/D	7.06	4.48
Nickel Metal	¹ 1.0	N/A	N/D	1.58	< 1.0
Hydrogen Chloride	10.0	N/A	N/D	22.78	< 10.0 ²

N/A = Not applicable, N/D = Not determined

¹ SMAL

² PM, PM₁₀, and PM_{2.5} conditioned potential were proportionally reduced based on the limits taken on Cadmium Metal and Nickel Metal.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of HAPs are conditioned below de minimis levels.

APPLICABLE REQUIREMENTS

De Tray Plating Works, Inc. shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- *MACT Regulations*, 10 CSR 10-6.075
 - *National Emission Standards for Chromium Emissions From Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks*, 40 CFR Part 63, Subpart N applies to the chromium plating tanks at this facility.
- *MACT Regulations*, 10 CSR 10-6.075
 - *National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Plating and Polishing Operations*, 40 CFR Part 63, Subpart WWWW applies to the nickel and cadmium plating tanks at this facility as well as any electroless plating operations that occur at this facility.
- *Restriction of Particulate Matter Emissions From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-6.405 applies the boiler at this facility. De Tray burns only natural gas to fuel their boiler and therefore, is in compliance with this rule.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Gerad Fox
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated November 27, 2012, received December 3, 2013, designating De Tray Plating Works, Inc. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

APPENDIX A

Abbreviations and Acronyms

%	percent	m/s	meters per second
°F	degrees Fahrenheit	Mgal	1,000 gallons
acfm	actual cubic feet per minute	MW	megawatt
BACT	Best Available Control Technology	MHDR	maximum hourly design rate
BMPs	Best Management Practices	MMBtu	Million British thermal units
Btu	British thermal unit	MMCF	million cubic feet
CAM	Compliance Assurance Monitoring	MSDS	Material Safety Data Sheet
CAS	Chemical Abstracts Service	NAAQS ...	National Ambient Air Quality Standards
CEMS	Continuous Emission Monitor System	NESHAPs	
CFR	Code of Federal Regulations	National Emissions Standards for Hazardous Air Pollutants
CO	carbon monoxide	NO_x	nitrogen oxides
CO₂	carbon dioxide	NSPS	New Source Performance Standards
CO_{2e}	carbon dioxide equivalent	NSR	New Source Review
COMS	Continuous Opacity Monitoring System	PM	particulate matter
CSR	Code of State Regulations	PM_{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
dscf	dry standard cubic feet	PM₁₀	particulate matter less than 10 microns in aerodynamic diameter
EQ	Emission Inventory Questionnaire	ppm	parts per million
EP	Emission Point	PSD	Prevention of Significant Deterioration
EPA	Environmental Protection Agency	PTE	potential to emit
EU	Emission Unit	RACT	Reasonable Available Control Technology
fps	feet per second	RAL	Risk Assessment Level
ft	feet	SCC	Source Classification Code
GACT	Generally Available Control Technology	scfm	standard cubic feet per minute
GHG	Greenhouse Gas	SIC	Standard Industrial Classification
gpm	gallons per minute	SIP	State Implementation Plan
gr	grains	SMAL	Screening Model Action Levels
GWP	Global Warming Potential	SO_x	sulfur oxides
HAP	Hazardous Air Pollutant	SO₂	sulfur dioxide
hr	hour	tph	tons per hour
hp	horsepower	tpy	tons per year
lb	pound	VMT	vehicle miles traveled
lbs/hr	pounds per hour	VOC	Volatile Organic Compound
MACT	Maximum Achievable Control Technology		
µg/m³	micrograms per cubic meter		

Mr. Jim Pierson
Owner
De Tray Plating Works, Inc.
10405 East 11th Street
Independence, MO 64052

RE: New Source Review Permit - Project Number: 2012-12-001

Dear Mr. Pierson:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions and your new source review permit application is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Gerad Fox, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:gfl

Enclosures

c: Kansas City Regional Office
PAMS File: 2012-12-001

Permit Number: