



Air Pollution Control Division Small Business Assistance Program

Chromium Electroplating and Chromium Anodizing Guidance

INTRODUCTION

The Clean Air Act requires the maximum degree of reduction in emissions of certain hazardous air pollutants (“HAP”) that the U.S. Environmental Protection Agency (“EPA”) determines is achievable for new or existing sources in a particular category or subcategory. In 1995, the EPA promulgated the National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks (“Chromium NESHAP”), codified at 40 C.F.R. Part 63, Subpart N. The EPA revised the Chromium NESHAP on September 19, 2012, and lowered the emissions and surface tensions limits for new and existing hard chromium electroplating, decorative electroplating, and chromium anodizing sources. EPA also promulgated housekeeping requirements to minimize fugitive emissions from affected sources, eliminated the use of fume suppressants containing perfluorooctane sulfonic acid (“PFOS”), and amended the requirements for testing, monitoring, reporting, and recordkeeping.

This guidance document summarizes the Chromium NESHAP standards and requirements applicable to hard chromium electroplating, decorative chromium electroplating, and chromium anodizing sources.

This guidance is for Summary Purposes Only - See Final Rule for Specific Requirements

CHROMIUM ELECTROPLATING

Chromium electroplating is a process by which a layer of chromium is electrodeposited on a base material. Chromium anodizing facilities use chromic acid to form an oxide layer on aluminum, which provides corrosion resistance. Decorative chromium electroplating facilities plate base materials with layers of copper and nickel, followed by a thin layer of chromium. This process provides a bright, tarnish, and wear resistance surface. And, hard chromium electroplating sources plate base metals with a thick layer of

chromium, which provides a finish resistant to wear, abrasion, heat, and corrosion.

During the electroplating process however, small droplets of chromium from the plating bath are formed when hydrogen and oxygen gas bubbles break the surface of the solution. The chromium droplets constitute hazardous air pollutants, which can be removed from the air by an air pollution control device.

APPLICABILITY, EXEMPTIONS

The Chromium NESHAP standards depend on whether a source is new, reconstructed, existing, major, or an area source. A new or reconstructed source commenced construction or reconstruction after February 8, 2012. An existing source commenced construction on or before February 8, 2012. A major source has the potential to emit 10 tons per year or more of any HAP or 25 tons per year or more of any combination of HAPs. An area source is not a major source.

The Chromium NESHAP exempts process tanks associated with a chromium electroplating or chromium anodizing process where the electroplating or anodizing does not take place, tanks that contain a chromium solution but where the electrolytic process does not occur, and research and laboratory operations.

COMPLIANCE DATES

Existing affected sources must be in compliance with the revised Chromium NESHAP by September 19, 2014. New or reconstructed affected sources with an initial startup after September 19, 2012, must be in compliance immediately upon startup. An area source that becomes a major source must be in compliance immediately upon becoming a major source. And, a small existing hard chromium electroplating facility that becomes a large facility must be in compliance within one year after becoming a large facility.

EMISSION LIMITS

Emission Limits for Chromium Electroplating Tanks - Single Source/Tank

Single Tank	Hexavalent or Trivalent	PFOS	Required Emission Limit
Hard Chromium <ul style="list-style-type: none"> • Large, existing • Small, existing • New 	n/a	After 9/21/2015, shall not add PFOS-based fume suppressants	<ul style="list-style-type: none"> • 0.011 mg/dscm • 0.015 mg/dscm • 0.006 mg/dscm • or surface tension: 40 or 33 dynes/cm
Decorative <ul style="list-style-type: none"> • Existing • New • Reconstructed 	Hexavalent & chromium anodizing tanks	After 9/21/2015, shall not add PFOS-based fume suppressants	<ul style="list-style-type: none"> • 0.007 mg/dscm • 0.006 mg/dscm • 0.006 mg/dscm • or surface tension: 40 or 33 dynes/cm
Decorative <ul style="list-style-type: none"> • Existing • New • Reconstructed 	Trivalent & wetting agent as ingredient	After 9/21/2015, shall not add PFOS-based fume suppressants	None - must keep records and report

Facilities that have multiple tanks onsite have special compliance provisions. These tanks may perform different operations, may have the same or different emission limits, and may be controlled by an air pollution control device that also controls unaffected sources. The Chromium NESHAP Section 63.344(e) details the procedures and equations for measuring emission from multiple sources controlled by a common add-on air pollution control device.

OPERATING & MONITORING REQUIREMENTS

Chromium emissions are typically controlled by either an add-on air pollution control device or a chemical fume suppressant. Add-on air pollution control devices include composite-mesh pad systems ("CMP"), packed bed scrubber systems ("PBS"), combines CMP and PBS, and fiber-bed mist eliminators ("FBME"). Chemical fume suppressants include foam blankets and wetting agents. However, after September 21, 2015, sources may no longer add PFOS-based fume suppressants.

The operating parameters for the air pollution control technique are determined during initial performance testing. These parameters must be monitored to ensure the source is in compliance with the applicable standard.

Summary of Ongoing Monitoring Requirements & Operating Parameter Values

Air Pollution Control System	Site Specific Operating Parameter ^a	Monitoring Frequency	Method Used to Establish Acceptable Values
Composite Mesh Pad System	Pressure drop across system, not during auto washdown cycles	Daily	Range of pressure drops during 3 performance tests; OR $\pm 2''$ H ₂ O column above the average pressure drop measured during one performance test.
Packed Bed Scrubber	Pressure drop across system & velocity pressure at system inlet	Daily	Range of velocity pressures during 3 performance tests; OR $\pm 1''$ H ₂ O column above the average velocity pressure and 10% above the average velocity pressure measured during one test.
Packed Bed Scrubber/Composite Mesh Pad System	Pressure drop across the mesh-pad system	Daily	see CMP
Fiber Bed Mist Eliminator	Pressure drop across eliminator & pressure drop across the control device located upstream of the fiber bed that prevents plugging	Daily	Range of pressure drops during 3 performance tests; OR $\pm 1''$ H ₂ O column above the average pressure drop measured during one performance test.
Wetting Agent or Combination Wetting Agent/Foam Blanket Fume Suppressants	Surface tension, using Method 306A	Every 4 hours	Maximum value established during Method 306B Appendix A test; OR forgo test and accept 40 dynes/cm (stalagmometer) or 33 dynes/cm (tensiometer).
Foam Blanket-type Fume Suppressant	Foam blanket thickness	Every hour	Minimum foam blanket thickness established during the performance test; OR 2.54 cm (1 inch).

All sources, except trivalent chromium solutions with a wetting agent incorporated as a bath ingredient, must comply with operation and maintenance practices. These practices are provided in Table 1 of the Chromium NESHAP. The revised Chromium NESHAP also requires housekeeping practices, provided in Table 2 of the Chromium NESHAP. The operation and maintenance practices ensure the air pollution control systems are properly maintained and operated and the housekeeping practices minimize fugitive emissions. Owners or operators must prepare an operation and maintenance ("O&M") plan and use checklists or logs to document that the practices are followed. O&M plans must be revised after inadequately addressing a malfunction.

TESTING REQUIREMENTS

The initial performance test establishes the values or range of values for the tested air pollution control system operating parameters. An initial performance test is not required if the source uses a wetting agent in the plating or anodizing bath and the owner or operator complies with the surface

tension limits or demonstrates continuous compliance monitoring. An initial performance test is also not required for sources using a trivalent chromium solution that incorporates a wetting agent as a bath ingredient.

For sources that must conduct an initial performance test, the owner or operator must also develop a site specific test plan. The performance test must also be documented in a test report following the completion of the test. Performance tests must be conducted within 180 days of a source's compliance date.

NOTIFICATION, REPORTS, RECORDKEEPING

The owner or operator of an existing source must submit an initial notification of source's subjectivity to the Chromium NESHAP or a notification of construction or reconstruction for a new or reconstructed source. An owner or operator must also notify the Division of the intent to conduct a performance test at least 60 days before the test is scheduled and submit a performance test report no later than 90 days after the test. The owner or operator must further submit ongoing compliance reports semiannually for a major source and annually for an area source.

The records of the above notifications and reports must be maintained by the owner or operator. The owner or operator must also keep records of the inspections of the air pollution control devices and monitoring devices, as well as reports of the occurrence, duration, cause, and corrective actions following malfunctions. Additional records include the date and time of periods of excess emissions during malfunctions, total process operating time, and records of bath components if the owner uses a trivalent chromium bath incorporating a wetting agent as an ingredient.

Reports are submitted to the Division and records must be maintained for at least five years.

APEN

An APEN is a form used to report a facility's emissions. Operators of Chromium electroplating facilities are required to submit an APEN to the Air Pollution Control Division if air emissions exceed the Reporting thresholds presented in Attachment A. If the permitting thresholds are exceeded in Attachment A, the source must obtain a permit from the Air Pollution Control Division (APCD) prior to construction or operation of the unit.

Reporting and Permitting thresholds can be more stringent if your source is in a nonattainment area because these areas exceed the National Ambient Air Quality Standards for regulated pollutants. VOCs and NO_x are considered precursors to Ozone and therefore businesses in the 8-hour nonattainment area must report at the nonattainment thresholds for those pollutants. All other pollutants are reported at the Attainment thresholds. To view a map of the nonattainment area in Colorado, visit:

www.colorado.gov/pacific/cdphe/ozone-information

All APEN and related forms are available through the Division and can be downloaded at: www.colorado.gov/pacific/cdphe/air-permits

PERMITTING, FEES

When you file an APEN, the Air Pollution Control Division will use the information to determine if a permit is required based on the thresholds in Attachment A. If a permit is required, the conditions on the permit will be based on the information which you submitted on the APEN.

An air permit can define the type of air pollution control measures that a business will have to use. It can also determine the amounts of materials that a business will be allowed to consume and any other operating limits that apply to the particular facility, which in return have an effect on the facility's air emission levels.

In the State of Colorado, Air Pollution Emission Permits (also called "Construction Permits") are issued for both minor and major sources of air pollution. A minor source emits less than 100 tons (uncontrolled) of any one pollutant in a nonattainment area, or less than 250 tons per year (uncontrolled) in an attainment area. If a facility exceeds these limits it is classified as a Major Source. A major source must obtain a construction permit and an Operating Permit. An operating permit is a permit issued under Title V of the 1990 Clean Air Act Amendments that includes all the individual sources of emissions at a plant into one all-inclusive permit. Operating permits usually require more monitoring and reporting of emissions than construction permits. Operating permits often contain operating and equipment maintenance plans.

WHAT FEES APPLY?

Filing Fee: A filing fee is required for each APEN submitted. This includes APENs submitted for administrative changes (e.g., change in ownership, change in location). Fees are subject to change by the legislature on an annual basis.

Annual Fee: All sources required to file APENs must pay annual fees. The Division bills each source subject to an APEN filing fee per ton of criteria pollutants emitted and per ton of non-criteria (hazardous air pollutants) emitted. The Division mails invoices for these fees in May or June of each year (these fees account for the emissions from the previous year's operation). Fees are subject to change by the legislature on an annual basis.

Permit Processing Fee: In addition to the APEN filing fee, permit-processing fees will be assessed at an hourly rate. If the total processing time is anticipated to be more than 30 hours the Division will contact the applicant in writing and provide an estimate of the projected processing time. The applicant can waive this notice by submitting a letter making this request when the application is submitted.

Current fee information is available online at:

<https://www.colorado.gov/pacific/cdphe/emissions-and-permitting-fees>

DIVISION INSPECTIONS/ENFORCEMENT

The Air Pollution Control Division (“Division”) has incorporated the Chromium NESHAP into Colorado Regulation Number 8, Part E; thus the Division is responsible for implementing and enforcing the Chromium NESHAP in Colorado.

See the Inspector’s Guidance Manual on the SBAP website for example forms, logs, and checklists.

FOR MORE INFORMATION

Contact the Small Business Assistance Program (“SBAP”) at the Colorado Department of Public Health and Environment.

SBAP offers free assistance
to small businesses with environmental questions.

SBAP: (303) 692-3175 or 3148

Small Business Ombudsman: (303) 692-2135

Website: www.colorado.gov/pacific/cdphe/small-business-assistance-program-sbap

ATTACHMENT A

APEN REPORTING THRESHOLDS		
Pollutant Category	Uncontrolled Actual Emissions	
	Attainment Area	Non-attainment Area
Criteria Pollutants	2 tons per year	1 ton per year
Lead	100 pounds per year	100 pounds per year
Non-Criteria Pollutants	≥ 250 pounds per year of any individual non-criteria reportable pollutant	≥ 250 pounds per year of any individual non-criteria reportable pollutant

<i>AIR PERMITTING THRESHOLDS</i>		
Pollutant Category	Uncontrolled Actual Emissions	
	Attainment Area (tons per year)	Non-attainment Area (tons per year)
PM-10	5	1
Total suspended particulates	10	5
Volatile organic compounds	5	2
Carbon monoxide	10	5
Sulfur dioxide	10	5
Nitrogen oxides	10	5
Lead	200 pounds per year	200 pounds per year
Other criteria pollutants: fluorides, sulfuric acid mist, hydrogen sulfide, total reduced sulfur, reduced sulfur compounds.	2	2