SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Preliminary Draft Staff Report
Proposed Amended Rule 1469 – Hexavalent Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations

September 2008

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BACKGROUND

Adopted in October 1998, Rule 1469 addresses hexavalent chromium emissions from chromium electroplating and chromic acid anodizing operations. The rule was last amended in February 2003 through a negotiated rulemaking pilot program that included input from industry representatives, environmental and community groups, agency staff, technical experts, and representatives from the Small Business Alliance and the Ethnic Community Advisory Group. The current rule primarily requires two levels of control for hard chromium electroplating, decorative chromium electroplating, and chromic acid anodizing operations. The lower level of control imposes an emission rate limit of 0.01 milligrams/ampere-hour typically achieved by use of in-tank controls such as chemical fume suppressants. The higher level of control requires an emission rate limit of 0.0015 milligrams/ampere-hour achieved by use of an add-on control device. The level of control to be complied with is determined by the facility-wide annual ampere-hour usage in combination with proximities to schools, sensitive receptors and residences.

On October 24, 2007, the California Air Resources Board (ARB) amended the Airborne Toxic Control Measure (ATCM) for Chromium Plating and Chromic Acid Anodizing Operations. The amended ATCM provides further hexavalent chromium emission reduction by requiring more stringent emission limit triggers for all facilities, and ensures that construction of new facilities are isolated from sensitive receptors. In addition to emission limit changes, housekeeping measures have also been made more stringent.

California Health and Safety Code (H&SC) section 39666(d) mandates the South Coast Air Quality Management District (AQMD) to implement and enforce ATCMs or enforce equally effective or more stringent rules than ATCMs adopted by the ARB. Proposed Amended Rule 1469 (PAR 1469) is being amended to incorporate the more stringent requirements of the recently amended ATCM with the addition of several other new provisions.

TOXICITY OF HEXAVALENT CHROMIUM

A substance is considered toxic if it has the potential to cause adverse health effects in people. A toxic substance released to the air is considered a toxic air contaminant. Hexavalent chromium is identified as a carcinogenic toxic air contaminant. Exposure to hexavalent chromium can potentially increase the risk of contracting cancer or result in other adverse health effects. Chronic health effects include problems such as reproductive, neurological, and respiratory damage with acute effects including headache and eye and skin irritations.

INDUSTRY CHARACTERIZATION

Most metal electroplaters are small, and electroplating is important support for many other industries. The automotive, computer/electronics, machinery/industrial equipment and defense/government are the four largest segments of industry served by all electroplaters. In addition, fasteners are a large industry segment for job shops. Chromium electroplating and chromic acid anodizing are commonly used processes in the industry for their ability to provide

properties of aesthetics, corrosion protection, or durability through either a chromium coating or an oxidized layer.

PROCESS DESCRIPTION

Chromium electroplating is an electrolytic process, where a part to be electroplated is submerged in a bath containing chromic anhydride (CrO_3), commonly called chromic acid, and sulfuric acid. The electroplating efficiency of a bath containing chromic acid is very low compared to the electroplating efficiency for most other metals, with 20% being considered the upper end of the efficiency range. Because of this, large amounts of hydrogen gas are liberated at the cathode and smaller amounts of oxygen gas at the anode during electroplating. The hydrogen gas forms very small bubbles, which have high misting potential. The gas bubbles entrain chromic acid and form chromic acid mist at the surface of the electroplating bath. A similar process occurs as oxygen bubbles break the surface of the electroplating bath. Bubble formation due to electrolysis is the primary mechanism by which hexavalent chromium emissions are generated. The magnitude of the emissions depend on several electroplating variables, including the concentration of chromic acid in the bath, ampere-hours used during electroplating, bath temperature, bath purity, and surface tension.

Hard chromium electroplating involves depositing a thick layer of chromium (measured in thousandths of an inch) on a part, imparting corrosion protection, wear-resistance, lubricity and oil retention among other properties. Decorative chromium electroplating involves depositing a thin layer of chromium (measured in millionths of an inch), which gives a decorative and protective finish. Chromic acid anodizing involves electrolytic oxidation of a surface to produce a wear and corrosion resistant surface, without depositing a metallic chromium layer.

AFFECTED FACILITIES IN THE BASIN

Within the South Coast Air Basin (Basin) there are currently 137 facilities conducting chromium electroplating and/or chromic acid anodizing. Of these 137 facilities are approximately 68 decorative chromium electroplating facilities, 34 hard chromium electroplating facilities, 32 chromic acid anodizing facilities, and 3 multiple process (combination of hexavalent chromium electroplating and chromic acid anodizing processes).

REGULATORY HISTORY

Chromium electroplating facilities have been subject to regulation for more than two decades. Below is a chronology of regulatory activity:

- In 1986, the California Air Resources Board (CARB) identified hexavalent chromium as a toxic air contaminant.
- In February 1988, CARB adopted the ATCM for Emissions of Hexavalent Chromium from Chrome Plating and Chromic Acid Anodizing Operations. Compliance with the

ATCM was based on reducing uncontrolled emissions by a specified percentage or meeting an emission limit.

- In June 1988, AQMD adopted Rule 1169, "Hexavalent Chromium – Chrome Plating and Chromic Acid Anodizing", which met the requirements of the state ATCM.
- In 1995, the U.S. EPA adopted the National Emission Standards (NESHAP) for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks. The federal regulations established emission limits for hard chromium electroplating operations, increasing in stringency with a facility's mass emissions and cumulative rectifier capacity. Decorative chromium electroplating and chromic acid anodizing operations are required to meet an exhaust standard, or maintain their electroplating bath at 45 dynes/cm or less. Trivalent chromium operations are subject to the regulation. Numerous monitoring, recordkeeping and reporting requirements are specified.
- In 1998, the state ATCM was amended for consistency with the NESHAP. The ATCM was expanded to include trivalent chromium operations, and tightened emission limits for hard chromium electroplating, among other things.
- AQMD Rule 1469 was adopted in 1998 as a replacement to Rule 1169. Rule 1469 incorporates the 1998 ACTM requirements.
- AQMD Rule 1469 was amended in 2003 as part of the Governing Board's Chairman's Strategic Alliance Initiative #8 – Negotiated Rulemaking Pilot Program through a negotiated rulemaking pilot program.
- In 2004, the U.S. EPA amended the NESHAP for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks. The amendments addressed the use of fume suppressants in hard chromium electroplating tanks, surface tension limits when using a tensiometer, alternate emission limits for hard chromium electroplating tanks equipped with enclosing hoods, revised definition of electroplating and anodizing tanks, and pressure drop monitoring requirements for composite mesh pad systems.
- In December 2006, ARB amended the state ATCM to maximize hexavalent chromium emission reductions from chromium electroplating and chromic acid anodizing facilities by requiring the use of BACT for all facilities. The regulation also ensured that new facilities are isolated from sensitive receptors.
- On October 24, 2007, the amended state ATCM became effective.

PROPOSAL

PAR 1469 implements the state ATCM's more stringent thresholds for compliance with emission standards based on Best Available Control Technology (T-BACT) levels for Toxics. New emission standards for existing, modified and new sources are as follows:

Existing Facilities

Table ES-1: Hexavalent Chromium Emission Limits for Existing Tanks			
Distance to Sensitive Receptor (meters)	Annual Permitted Ampere-hours	Emission Rate Limit (mg/ampere-hr)	Effective Date
≤ 100	≤ 20,000	0.01[2]	4/24/2008
≤ 100	> 20,000 and ≤ 200,000	0.0015[1]	10/24/2010
≤ 100	> 200,000	0.0015[1]	10/24/2009
> 100	≤ 50,000	0.01[2]	4/24/2008
> 100	> 50,000 and ≤ 500,000	0.0015	10/24/2011
> 100	> 500,000	0.0015[1]	10/24/2009

[1] Measured after add-on air pollution control device(s).
[2] Achieved through use of Certified Chemical Fume Suppressants. Alternatively, a facility may install an add-on air pollution control devices(s) that controls emissions to below 0.0015 mg/amp-hr.

Modified Facilities

- Comply with an emission rate of 0.0015 milligram/ampere-hour

New Facilities

- Comply with an emission rate of 0.0011 milligram/ampere-hour

Other proposed rule changes include:

- Requirement for new facilities to be constructed outside and beyond 1000 feet from a school, school under construction, or an area zoned for residential or mixed use;
- Broader definition of sensitive receptor;
- More stringent surface tension requirements for certifying fume suppressants;
- More stringent housekeeping practices for all facilities;
- Increased monitoring and recordkeeping; and
- Prohibition of the sale, supply, or manufacture of chromium electroplating or chromic acid anodizing kits to unpermitted facilities.

Additional proposed rule changes beyond the ATCM:

- Permit application submittal requirements;
- Requirement to prohibit air compressed cleaning operations at or adjacent to the hexavalent chromium electroplating or chromic acid anodizing operations;
- Requirement for new facilities to be constructed outside and beyond 1000 feet from a sensitive receptor;
- Capture efficiency requirements and periodic smoke tests for add-on air pollution control devices;
- Increased monitoring and recordkeeping requirements for back pressure and inlet velocity pressure of add-on air pollution control devices; and
- Requirement to retain purchase orders and disposal records for filters used in add-on air pollution control devices.

IMPACT ASSESSMENT

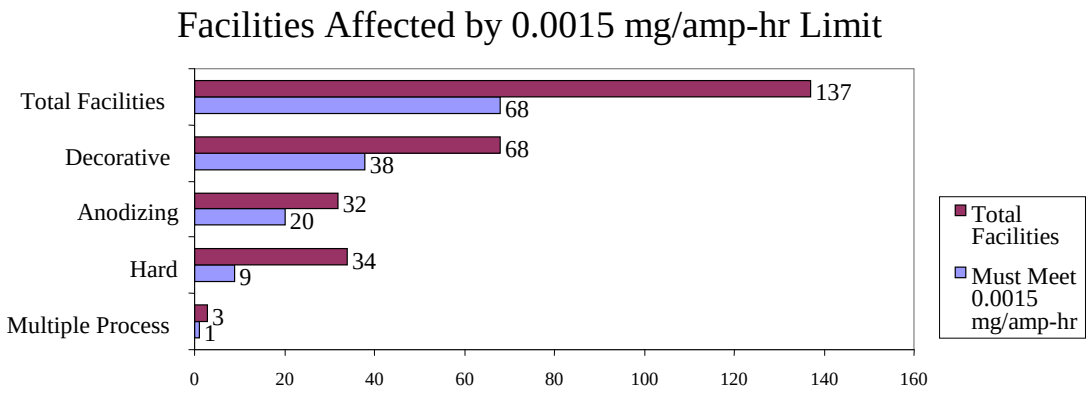
Implementation of PAR 1469 would result in a net environmental benefit due to the further reduction of hexavalent chromium emissions and associated health risk. A technical analysis of the hexavalent chromium electroplating (hard and decorative) and chromic acid anodizing

industry under AQMD jurisdiction is being conducted to evaluate potential economic and environmental impacts of PAR 1469. Staff has determined that the impact incurred by the affected industry will include things such as installing or upgrading add-on air pollution control devices, conducting source tests, and equipment installation for new housekeeping requirements.

EMISSION RATE IMPACT

Figure ES-1 below shows how many facilities will be required to meet the more stringent emission limit of 0.0015 mg/amp-hr due to the ATCM based changes made in PAR 1469. It is anticipated that 68 facilities of 137 in the Basin will be impacted by the 0.0015 mg/amp-hr emission limit.

Figure ES-1



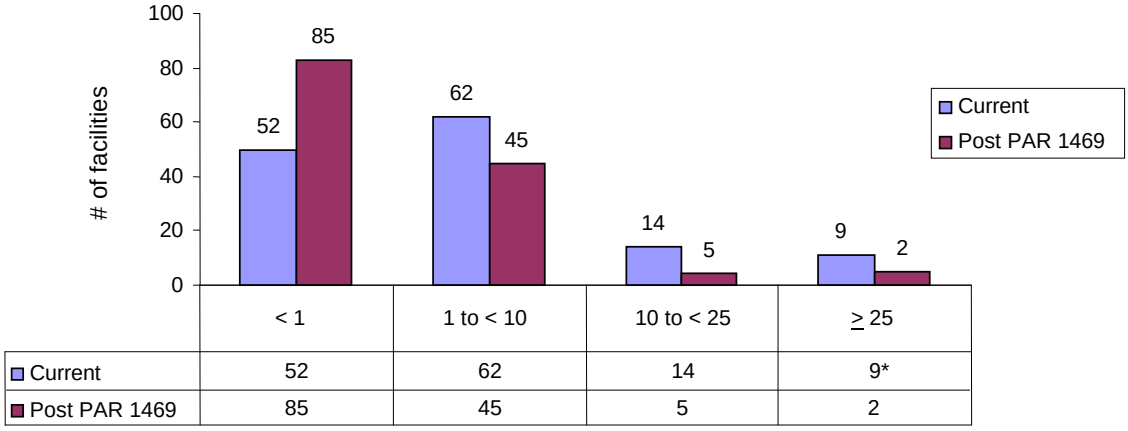
	Mulitple Process	Hard	Anodizing	Decorative	Total Facilities
Total Facilities	3	34	32	68	137
Must Meet 0.0015 mg/amp-hr	1	9	20	38	68

RISK REDUCTION

Figure ES-2 shows the number of chromium electroplating and chromic acid anodizing facilities that currently fall into various cancer risk groupings before and after implementation of PAR 1469. This information is based on a Tier 2 screening risk assessment using the calculation methodology specified in AQMD's "Risk Assessment Procedures for Rules 1401 and 212", and facility-specific data for parameters such as permitted annual ampere-hour usage limits and receptor distances.

Figure ES-2

Risk Reduction (in a million) of Chromium Electroplating and Chromic Acid Anodizing Facilities Post PAR 1469



	< 1	1 to < 10	10 to < 25	≥ 25
Current	52	62	14	9*
Post PAR 1469	85	45	5	2

As the figure shows, the cancer risks from most facilities are expected to be below the Rule 1402 action level of 25 in a million. PAR 1469 will require facilities with annual emissions greater than 15 grams to submit a health risk assessment pursuant to District Rule 1402 subdivision (d) within 150 days of the end of the year during which the 15 gram limit was exceeded. CARB has determined that hexavalent chromium emissions of 15 grams per year could potentially cause exceedance of the action risk level of Rule 1402. If the health risk assessment shows that the maximum individual cancer risk from the facility is greater than 25 in a million, then the facility will be required to develop and implement a risk reduction plan pursuant to Rule 1402. If the risk is less than or equal to 25 in a million, there are no further requirements under Rule 1402 and the facility is required to comply with Rule 1469.

There are 7 facilities with hexavalent chromium emissions exceeding 15 grams per year. One of the seven is already in the AB2588 Toxics Hot Spots program and AQMD staff has already initiated the process of notifying the other six facilities to submit an HRA. There are 9 facilities (see figure ES-2) with an estimated cancer risk of greater than 25 in a million based on a Tier 2 risk analysis. Three of the facilities with greater 25 in a million risk overlap with the facilities with more than 15 grams/year of hexavalent chromium emissions and will be receiving notifications. Two of the facilities are already in AB2588 and the remaining four facilities are expected to have less than 25 in a million risk after adding controls required by PAR 1469.

CEQA AND SOCIOECONOMIC ASSESSMENT

A CEQA analysis is currently being conducted to analyze all amendments, both new and those that are based on the ATCM, and assess the environmental impacts associated with compliance under PAR 1469. In addition, a socioeconomic assessment is being conducted to analyze the costs associated with compliance under PAR 1469.

CHAPTER 1: BACKGROUND

BACKGROUND

TOXIC AIR CONTAMINANTS

REGULATORY HISTORY

PROPOSAL

BACKGROUND

AQMD adopted Rule 1169 on June 3, 1988, which met the requirements of the state ATCM for Chromium Plating and Chromic Acid Anodizing Operations. In 1998, Rule 1169 was repealed and Rule 1469 was adopted.

When Rule 1469 was last amended in May 2003, and the Air Toxics Control Plan was adopted, the Board directed staff to evaluate source-specific rules for eight industries, including metal plating. Rather than have many small businesses go through individual evaluations under Rule 1402, the preferred approach was to amend Rule 1469 to reduce cancer risks to neighboring residents and businesses based on technical and economic feasibility. Due to the potency, close proximity to receptors, and high throughputs of some facilities, elevated health risks from hexavalent chromium emissions remain.

The proposed rule amendment incorporates the changes made to the Airborne Toxic Control Measure (ATCM) for Chromium Plating and Chromic Acid Anodizing Operations. The newly amended ATCM became effective on October 24, 2007. The ATCM achieves further hexavalent chromium emission reductions by requiring more stringent emission limit triggers for all facilities, and ensures that construction of new facilities are isolated from sensitive receptors. In addition to emission limit changes, housekeeping measures have also been made more stringent. Under H&SC 39666(d), the AQMD has the authority to either enforce equally effective or more stringent regulations than the state ATCM.

TOXIC AIR CONTAMINANTS

A substance is considered toxic if it has the potential to cause adverse health effects in people. A toxic substance released to the air is considered a TAC or "toxic air contaminant". TACs are identified by state and federal agencies based on a review of available scientific evidence. In 1986, the California Air Resources Board (ARB) identified hexavalent chromium as a carcinogenic TAC.

Exposure to hexavalent chromium can potentially increase the risk of contracting cancer or result in other adverse health effects. A health risk assessment is used to estimate the likelihood that an individual would contract cancer or experience other adverse health effects as a result of exposure to listed TACs.

Some TACs have the potential to cause adverse noncancer health impacts. A chronic effect is a noncancer health impact that is the result of exposure to a TAC over a long period of time. Chronic health effects are problems such as birth defects and other reproductive damage, neurological, respiratory, and other adverse health effects. Acute effects may result from short term exposures to a chemical. Examples of acute health effects include headache, respiratory problems, and eye and skin irritation.

Hexavalent chromium is a potent carcinogen (second only to dioxin) and was identified as a key TAC in AQMD's Multiple Air Toxics Exposure Study (MATES) II and MATES III studies. The

Office of Environmental Health Hazard Assessment (OEHHA) has assigned hexavalent chromium a cancer unit risk factor of 0.15 $(\mu g/m^3)^{-1}$. This factor means that out of one million people, a person has a 15 percent chance of developing cancer due to exposure to 1 milligram of the TAC per kilogram of body weight over a 70 year lifetime.

REGULATORY HISTORY

In January 1986, the California Air Resources Board (ARB) identified hexavalent chromium as a toxic air contaminant in accordance with Health and Safety Code (H&SC) section 39650, et seq. In February 1988, ARB adopted the Chromium Plating Airborne Toxic Control Measure (ATCM) to reduce emissions of hexavalent chromium from hard and decorative chromium electroplating and chromic acid anodizing operations. Under California H&SC Section 39666, air districts have the option of either directly enforcing the ATCM without adopting a regulation, or adopting an equally effective or more stringent regulation. AQMD adopted Rule 1169 on June 3, 1988, which met the requirements of the state ATCM.

In January 1995, the United States Environmental Protection Agency (USEPA) promulgated National Emission Standards for Hazardous Air Pollutants (NESHAP) – Chromium Emissions from Hard and Decorative Chromium Plating and Chromic Anodizing Tanks. After adoption of this NESHAP, chromium electroplating and anodizing sources in California were subject to both the Chromium Plating ATCM and the NESHAP.

In May 1998, ARB amended the Chromium Plating ATCM in order to combine and simplify the compliance requirements of the existing ATCM and the NESHAP. On October 9, 1998, AQMD adopted Rule 1469 and repealed Rule 1169. Rule 1469 was amended on May of 2003 in order to provide more stringent requirements for emission standards and housekeeping through a negotiated rulemaking process. ARB recently amended the Chromium Plating ATCM in order to further isolate electroplating facilities from sensitive receptors and residents, and also added more stringent requirements for new and existing facilities and housekeeping practices. PAR 1469 has been developed to address the changes made to the ATCM.

NESHAP

The NESHAP establishes emission limits for existing hard chromium electroplating operations, increasing in stringency for increasing facility mass emissions, and increasing in stringency for facilities with a cumulative rectifier capacity greater than 60 million ampere*hours/yr. Decorative chromium electroplating and chromic acid anodizing operations are required to meet an exhaust standard for total chromium of $\leq$ 0.01 mg/dscm, or maintain their electroplating bath at $\leq$ 45 dynes/cm when using a stalagmometer, or $\leq$ 35 dynes/cm when using a tensiometer. Numerous monitoring, recordkeeping and reporting requirements are specified.

State Airborne Toxic Control Measure (ATCM)

The 1998 amendments to the Chromium Plating ATCM were for consistency with the chromium electroplating NESHAP. They expanded the ATCM to include trivalent chromium electroplating operations, eliminated standards based on percent reduction of uncontrolled emissions, and tightened emission limits for hard chromium electroplating, among other things.

The most recent amendment in 2007 further isolates chromium electroplating and chromic acid anodizing facilities from sensitive receptors and residents, and also adds more stringent requirements for new and existing facilities and housekeeping practices. A more detailed description of the ATCM requirements is contained in Appendix A.

Rule 1469

Rule 1469 was adopted on October 9, 1998 and applies to chromium electroplating (hard and decorative) and chromic acid anodizing processes. In general, the rule incorporates Rule 1169, adopted in 1998, and establishes emission limits based on throughputs and proximities to sensitive receptors, requires ongoing monitoring, initial performance testing of add-on control devices, reporting, and recordkeeping.

Rule 1401 Requirements

Rule 1401 – New Source Review of Toxic Air Contaminants was adopted in June 1990 and most recently amended in March 2008. Rule 1401 establishes permitting requirements for new, relocated and modified sources that emit toxic air contaminants. The risk-based limits are a maximum individual cancer risk (MICR) of one in one million (1×10^{-6}) if a permit unit is not constructed with best available control technology for toxics (T-BACT), and ten in one million (10×10^{-6}) if T-BACT is used. The increase in excess cancer cases in the population due to the permit unit is limited to 0.5, and the limit for noncancer acute and chronic compounds is a Hazard Index (HI) of 1.0 for any target organ system. Hexavalent chromium compounds have been evaluated for new source review since 1990 for cancer and since 2001 for chronic effects.

Rule 1402 Requirements

Rule 1402 – Control of Toxic Air Contaminants from Existing Sources was adopted by the AQMD Governing Board in 1994 and last amended in 2005. The rule implements the requirements of California Health and Safety Code (H&S) Sections 44390 to 44394 (Chapter 6 of Part 6. Air Toxics "Hot Spots" Information and Assessment). Air pollution districts are required to establish significant risk levels and require facilities with risks above significant levels to reduce emissions of TACs. The health risk assessment is based upon emissions from all processes at the facility. The objective of Rule 1402 is to minimize public health risk from existing emissions of TACs. This rule applies to existing facilities within AQMD's jurisdiction whose facility-wide TAC emissions exceed specific risk levels. Rule 1402 establishes requirements for applicability, significant risk levels, risk assessment, risk reduction plans, implementation of risk reduction plans and progress reports.

Facilities subject to Rule 1402 are required to prepare detailed inventories, and depending on their emissions and health risks, may need to prepare risk assessments and implement risk reduction plans. Rule 1402 includes a significant cancer risk level of 100 in a million and an action risk level of 25 in a million. There are also non-cancer risk levels. Rule 1402 sets hexavalent chromium reporting thresholds for the Metal Finishing industry at 0.005 lbs/yr which once exceeded, requires a facility to submit a total facility toxic emissions inventory to the District. In addition, state law (H&S Code Section 44391) requires any facility with significant risk (100 in a million cancer risk or a chronic HI of 5.0 for Rule 1402) to reduce risk.

PROPOSAL

Under H&SC 39666(d), local air districts are required to either enforce equally effective or more stringent regulations than the state ATCM. Staff has determined that several elements of current Rule 1469 as it stands are more stringent than the newly amended ATCM. Adopting the ATCM by reference would not result in either an equally effective or more stringent regulation than current Rule 1469. Therefore, PAR 1469 proposes incorporating the more stringent standards of the newly amended state ATCM into current Rule 1469, along with the addition of several new or more stringent requirements.

PAR 1469 will establish more stringent emission standards for chromium electroplating and chromic acid anodizing by requiring existing facilities to comply with T-BACT emission limits triggered at significantly lower annual permitted ampere-hour thresholds and closer proximities to sensitive receptors than those of current Rule 1469. An emission rate impact assessment conducted by staff estimates most facilities will be required to reduce their cancer risk levels to less than 10 in a million. The following are proposed rule changes based on the more stringent requirements of the ATCM:

- New facilities will be required to comply with an emission limit of 0.0011 mg/ampere-hour;
- Requirement for new facilities to be constructed outside and beyond 1000 feet from a school, school under construction, or an area zoned for residential or mixed use;
- Modified facilities with any increases of hexavalent chromium emissions will be required to comply with an emission limit of 0.0015 mg/ampere-hour regardless of annual permit ampere-hour thresholds;
- Broader definition of sensitive receptor;
- More stringent surface tension requirements for certifying fume suppressants;
- More stringent housekeeping practices for all facilities;
- Prohibition of the sale, supply, or manufacture of chromium electroplating or chromic acid anodizing kits to unpermitted facilities.

Additional proposed rule changes beyond the ATCM include:

- Permit application submittal requirements;
- Prohibition of air compressed cleaning operations at or adjacent to the hexavalent chromium electroplating or chromic acid anodizing operations;
- Requirement for new facilities to be constructed outside and beyond 1000 feet from a sensitive receptor;
- Capture efficiency requirements and periodic smoke tests for add-on air pollution control devices;
- Increased monitoring and recordkeeping requirements for the back pressure and inlet velocity pressure of add-on air pollution control devices; and
- Requirement to retain purchase orders and disposal records for filters used in add-on air pollution control devices.

CHAPTER 2: INDUSTRY CHARACTERIZATION

AFFECTED FACILITIES IN THE BASIN

INDUSTRY DESCRIPTION

PROCESS DESCRIPTION

CONTROL TECHNOLOGIES

DISTRIBUTION OF CONTROLS IN THE BASIN

AFFECTED FACILITIES IN THE BASIN

Hexavalent Chromium Electroplating and Chromic Acid Anodizing

A total of 137 active hexavalent chromium electroplating and chromic acid anodizing facilities are located within the Basin. Of the 137 facilities, 34 conduct hard chromium electroplating, 68 conduct decorative chromium electroplating, 32 conduct chromic acid anodizing, and 3 facilities conduct a combination of both hexavalent chromium electroplating and chromic acid anodizing. Located at these facilities are 142 hard chromium electroplating tanks, 87 decorative chromium electroplating tanks, and 42 chromic acid anodizing tanks for a total of 271 tanks.

INDUSTRY DESCRIPTION

Most metal electroplaters are small, and electroplating is important support for many other industries. Electroplating shops are classified as either job shops or captive shops. Job shops are independent operators that serve a variety of industries. Captive shops are found within companies that manufacture products rather than specialize in metal plating.

The automotive, computer/electronics, machinery/industrial equipment and defense/government are the four largest segments of industry served by all electroplaters. In addition, fasteners are a large industry segment for job shops.

The most common electroplating processes in job shops include nickel, copper, zinc and chromium. In captive shops, the most common processes include nickel, chromium and zinc. Other (non-electroplating) finishing processes used in job and captive shops include, metal stripping, bright dipping, immersion plating and paint stripping, among others. Captive shops typically have a higher degree of automation, due to their more predictable finishing requirements. There is considerable similarity in the types of rack and barrel systems used by captive and job shops. Types of equipment employed at both captive and job shops include manual hoist, hand lines, automated hoist, automated return and reel-to-reel lines.

The majority of chromium electroplating and chromic acid anodizing facilities are considered job shops, which typically perform a wide range of metal finishing services in addition to chromium electroplating (i.e. nickel plating, copper plating) and offer these services for contract. Different from job shops are captive shops located in industries where chromium electroplating is used as a secondary process to aid in production.

PROCESS DESCRIPTION

Chromium electroplating is an electrolytic process, where a part to be electroplated is submerged in a bath containing chromic anhydride (CrO_3), commonly called chromic acid, and sulfuric acid. The electroplating efficiency of a bath containing chromic acid is very low compared to the electroplating efficiency for most other metals, with 20% being considered the upper end of the efficiency range. Because of this, large amounts of hydrogen gas are liberated at the cathode and smaller amounts of oxygen gas at the anode during electroplating. The hydrogen gas forms very

small bubbles, which have high misting potential. The gas bubbles entrain chromic acid and form chromic acid mist at the surface of the electroplating bath. A similar process occurs as oxygen bubbles break the surface of the electroplating bath. Bubble formation due to electrolysis is the primary mechanism by which hexavalent chromium emissions are generated. The magnitude of emissions depends on several electroplating variables, including the concentration of chromic acid in the bath, ampere-hours used during electroplating, bath temperature, bath purity, and surface tension.

Hard Chromium Electroplating

Hard chromium electroplating involves depositing a "thick" layer of chromium (measured in thousandths of an inch) on a part, imparting corrosion protection, wear resistance, lubricity and oil retention among other properties. Examples of parts, which are hard chromium electroplated, include engine parts, industrial machinery and tools. It is nearly always applied to parts made of steel. Because of the thickness of the electroplating layer, electroplating duration is measured in hours or days.

Decorative Chromium Electroplating

Decorative chromium electroplating involves depositing a thin layer of chromium (measured in millionths of an inch), which gives a decorative and protective finish. Examples of parts, which are decorative chromium electroplated, include furniture components, bathroom fixtures, car bumpers and wheels. Electroplating duration is measured in seconds or minutes.

Chromic Acid Anodizing

Chromic acid anodizing involves electrolytic oxidation of a surface to produce a wear and corrosion resistant surface, without depositing a metallic chromium layer. Anodizing is an electrochemical process during which aluminum is the anode. When an electric current passes through the electrolyte, it converts the metal surface to a durable aluminum oxide. The difference between electroplating and anodizing is that the oxide coating is integral with the metal substrate as opposed to being a metallic coating deposition. The oxidized surface is hard and abrasion resistant, and it provides some degree of corrosion resistance.

CONTROL TECHNOLOGIES

Several types of controls are available for metal electroplating processes and are currently used for reducing emissions from electroplating operations. They are described below.

High-Efficiency Particulate Arrestors (HEPA)

Used in conjunction with a prefilter, high-efficiency particulate air (HEPA) filters can trap toxic particles as small as 0.3 µm at an efficiency of 99.97 percent or greater. Like cartridge filters, HEPA filter elements are of pleated construction. HEPA filters are generally limited to ambient temperature (100ºF), though special applications for higher temperatures are available. Unlike bags or cartridge filters, HEPA filters are not automatically cleaned. When a HEPA filter element becomes loaded with particulate matter, the element is changed out and disposed of as hazardous waste.

Totally Enclosed Tanks

This technology, which is applicable to hard chromium electroplating and chromic acid anodizing, uses a hinged cover to form a completely sealed system to contain chromic acid emissions within the enclosed tank area. Hydrogen gas and oxygen resulting from the electroplating process is vented through membranes on the cover which are sized to not allow passage of chromic acid mist or water vapor. Vapor containing chromic acid in the headspace between the cover and the tank surface dissipates back into the tank after electroplating is completed after several minutes, or tank vapors can be evacuated from the tank through a small cartridge filter prior to opening the cover. Control efficiency is reported to be 100 percent.

Mist Suppression at Tank Surface

Applicable to electroplating and anodizing, mist suppression at the surface of the electroplating or anodizing tank is a low-cost, zero-energy, first-step method of mitigating heavy metal (including hexavalent chromium) bearing aerosols before they become entrained in ventilation air and put an unnecessary load on downstream control. Mist suppression is accomplished by floating polyethylene balls covering the wet surface of an electroplating or anodizing tank. Tanks remain fully functional with respect to work piece submergence and removal, and the aerosol generation is reduced from 50 to 80 percent. Since aerosols are prevented from leaving the tank surface, there is no waste stream associated with this technology.

Wet Packed Bed Scrubber

Wet packed-bed scrubbers consist of a vertical column made of fiberglass or other non-corrosive material loosely filled with specially shaped plastic packing material which maximizes gas-to-liquid contact and minimizes pressure drop across the column. Exhaust air from electroplating or anodizing tank line enters at the bottom of the scrubber and exits at the top. The scrubbing solution is pumped from a reservoir at the base of the scrubber and sprayed down into the packing from the top. This flow scheme is called counter-current scrubbing and is the dominant method in use today due to its high pollutant removal efficiency, ranging from 90 to 98 percent, depending on residence (contact) time and solution freshness.

Chevron Mist Eliminators

This air pollution control device is available in different functional designs, the most common being a chevron-shaped baffle pattern which forces mist-laden air to make several abrupt changes in direction between the entry and exit points of the baffle material. Since mist droplets are much heavier than air molecules, they have too much linear momentum to make sharp turns without impacting the baffles. Since many mist droplets impact on the baffles, a liquid film forms causing large droplets to coalesce and drop back down into the piece of equipment being controlled. Mist eliminators are used at the exhaust points of tank vents and wet packed scrubbers to prevent excessive emissions of aerosols and to conserve process and scrubbing solutions, respectively. Since the liquid droplets formed by mist eliminators return to the controlled device, there are no waste streams resulting from their application.

Mesh Pad Mist Eliminators

Mesh pad mist eliminators are used to recover electroplating chemistry of chromium electroplating and chromic acid anodizing. For caustic baths, mesh pads are used to prevent

corrosion of the ventilation system. They are also used in scrubber systems for primary removal of particles. However, in this application, multiple exhaust streams are typically combined in a single mist eliminator, thus removing the possibility of chemical recovery.

Mesh pads are considered more efficient than liquid scrubbers. They use smaller amounts of water, making chemical recovery feasible. In a typical arrangement, a mesh pad mist eliminator serves a single electroplating tank and is installed in the ventilation system. The cross sectional area of the exhaust duct is increased by the unit, reducing the velocity of the exhaust stream and allowing electroplating solution to adhere to the mesh pads. Removal efficiency is increased by adding mesh pads. The pads are periodically washed down and the collected electroplating solution is returned to the electroplating bath.

Fume Suppressants

Fume suppressants are chemical agents that reduce or suppress fumes or misting at the surface of chromium electroplating baths. There are two basic types of fume suppressants: wetting agents (surfactants) and foam blankets. Wetting agents lower the surface tension of electroplating baths to reduce misting. Foam blanket fume suppressants, in which foam layers are generated across electroplating baths when current is applied, physically trap mists.

Surfactant fume suppressants reduce the size of bubbles passing through electroplating baths which, in turn, burst with less impact on the surface of the bath, resulting in significantly lower mists. The most common surfactant fume suppressants are fluorinated or perfluorinated because fluorine adds stability over a wide range of operating parameters and electroplating bath chemistries. Surfactant fume suppressants typically reduce emissions by 95 to 99+ percent, depending on surface tension of the electroplating bath. In some cases, the use of surfactant fume suppressants is found to accentuate the development of small holes or imperfections during plating known as “pitting”. This is mainly a concern found in hard chromium electroplating applications due to the length of time required to build the desired thickness of the chromium layer.

Foam blanket fume suppressants, which are most commonly used for hard chromium electroplating tanks, do not inhibit formation of mists, but physically trap the mists under a blanket of foam. Foam blankets are generated from agitation produced by hydrogen and oxygen bubbles during the electroplating process and are typically maintained at thicknesses of 0.5 to 1 inches. Foam blanket effectiveness is dependent on maintaining optimal blanket thickness. If blankets are too thin, mists will not be adequately contained. If too thick, foam blankets can trap hydrogen gas, creating a potential explosion hazard. Foam blanket fume suppressants typically reduce emissions by 70 percent.

DISTRIBUTION OF CONTROLS IN THE BASIN

Control of Chromic Acid Mist from Chromium Electroplating and Chromic Acid Anodizing Operations

Figures 2-1 through 2-3 show distributions of the current strategies employed by facilities within the Basin to reduce chromium emissions from electroplating and anodizing processes.

Figure 2-1

Distribution of Controls for Hard Chromium Electroplating Facilities

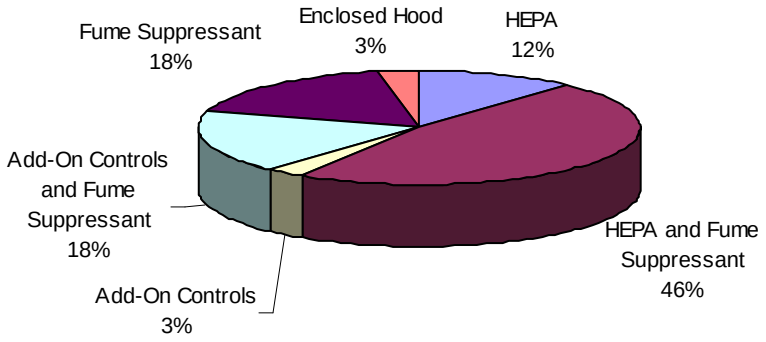


Figure 2-2

Distribution of Controls for Decorative Chromium Electroplating Facilities

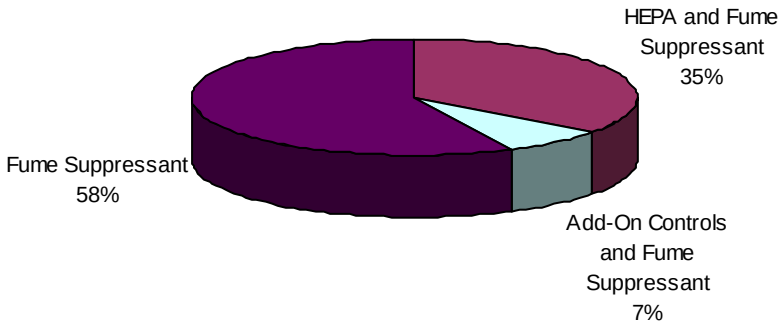
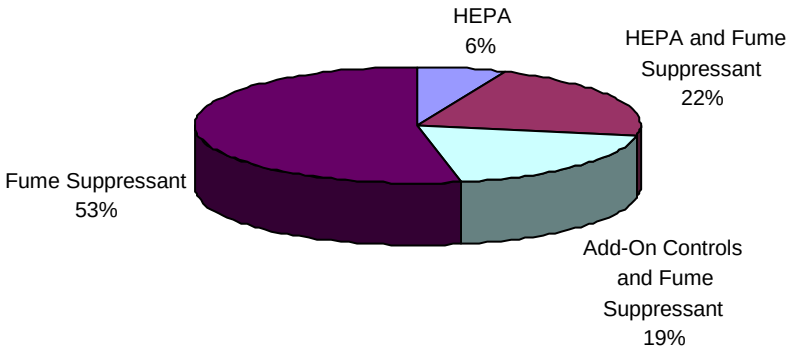


Figure 2-3

Distribution of Controls for Chromic Acid Anodizing Facilities



CHAPTER 3: PROPOSED AMENDED RULE 1469

PROPOSED AMENDMENTS TO RULE 1469

PROPOSED AMENDMENTS TO RULE 1469

This chapter outlines changes and additions made to the current version of Rule 1469, and is divided into sections as they appear in PAR 1469. The proposed rule language is provided in Appendix B.

PAR 1469 has replaced all references to "plating" with "electroplating", "chrome" to "chromium", and "add-on air pollution control equipment" to "add-on air pollution control device" for consistency. Other administrative changes, such as renumbering, have also been made.

Applicability

Current Rule 1469 applies to each chromium electroplating or chromic acid anodizing tank at facilities performing hard chromium electroplating, decorative chromium electroplating, and chromic acid anodizing operations. The applicability section in PAR 1469 has been changed to apply to the owner or operator of a facility performing chromium electroplating or chromic acid anodizing. The change clarifies that the requirements of Rule 1469 apply facility-wide and places responsibility on the facility owner or operator rather than equipment.

PAR 1469 also extends applicability to any person who sells, supplies, offers for sale, uses, or manufactures for sale a chromium electroplating or chromic acid anodizing kit in the District. This applicability has been added in order to be consistent with state ATCM Section 93102.1 (a)(1).

Definitions

The following definitions have been either added or edited for consistency with definitions of the state ATCM, unless otherwise noted:

- ADD-ON AIR POLLUTION CONTROL EQUIPMENT (changed "equipment" to "device")
- AIR POLLUTION CONTROL TECHNIQUE (edited to include mechanical fume suppressant)
- ANNUAL PERMITTED AMPERE-HOURS (added)
- BASE METAL (edited to base material)
- DRAGOUT (added)
- EXISTING FACILITY (added)
- LARGE, HARD CHROMIUM ELECTROPLATING FACILITY (omitted as it has no reference or meaning in PAR 1469)
- MEDIUM, HARD CHROMIUM ELECTROPLATING FACILITY (omitted as it has no reference or meaning in PAR 1469)
- MODIFICATION (edited to exclude an increase in an annual ampere-hour limit)
- MODIFIED FACILITY (added)
- NEW FACILITY (added)
- SCHOOL (added)
- SCHOOL UNDER CONSTRUCTION (added)

- SMALL, HARD CHROMIUM ELECTROPLATING FACILITY (omitted as it has no reference or meaning in PAR 1469)
- SENSITIVE RECEPTOR (significantly edited to include additional types of facilities considered as sensitive)
- SUBSTANTIAL USE (added)

The state ATCM has broadened the definition of what is considered a sensitive receptor. Current Rule 1469 defines sensitive receptor to mean schools (kindergarten through grade 12), licensed daycare centers, hospitals, and convalescent homes. For consistency with the state ATCM, PAR 1469 has defined sensitive receptor to mean:

- any residence including private homes, condominiums, apartments, and living quarters;
- preschools;
- retirement and nursing homes;
- long term care hospitals and hospices;
- prisons;
- dormitories or similar live-in housing.

References to sensitive receptor will be assumed as the new definition found in PAR 1469 for the remainder of this chapter.

Requirements

Paragraph (c)(1) of the current rule requires that the owner or operator shall meet the requirements of the Chromium Plating ATCM and NESHAPS until Rule 1469 has been fully implemented. Since Rule 1469 is currently in full effect, this paragraph is no longer necessary and has been omitted in PAR 1469.

Paragraph (c)(2) of the current rule has been renumbered as (c)(1) and requires that the owner or operator of a hexavalent chromium electroplating tank, chromic acid anodizing tank, or group of such tanks, shall equip each tank with a continuous recording, non-resettable, ampere-hour meter. PAR 1469 requires all chromium electroplating tanks, including trivalent chromium tanks, to be equipped with an ampere-hour meter. This requirement has been broadened in order to be consistent with section 93102.9 (a) of the state ATCM.

Housekeeping Requirements

This section has been renamed from "Housekeeping Practices" to "Housekeeping Requirements".

The following changes have been made in PAR 1469 in order to be equivalent to the state ATCM:

- PAR 1469 (c)(4)(A) has been edited to include closed container storage of not only chromic acid powder or flakes, but any substance that may contain hexavalent chromium when not in use.
- PAR 1469 (c)(4)(C) has been edited to require the clean up of liquid or solid material spills that may contain hexavalent chromium. Rule 1469 currently applies the clean up requirement to the spill of sludge.

- PAR 1469 (c)(4)(D) has been edited to require, at least once every seven days, the cleaning of the following areas:
  - ✓ Storage area
  - ✓ Open floor area
  - ✓ Walkways around the electroplating or anodizing tank(s)
  - ✓ Any surface potentially contaminated with hexavalent chromium or potentially accumulates dust

  Cleaning by use of "vacuum" has been changed to "HEPA vacuuming". Also, "hand wiped with a damp cloth" has been added as a cleaning option.
- PAR 1469 (c)(4)(E) has been edited to require the handling of generated chromium or chromium-containing wastes in accordance with hazardous waste requirements.
- PAR 1469 (c)(4)(F) has been added to require the installation of a physical barrier to separate buffing, grinding, or polishing areas from the electroplating or anodizing operation.
- PAR 1469 (c)(4)(G) has been added to prohibit air compressed cleaning operations at or adjacent to the hexavalent chromium electroplating or anodizing operations.
- PAR 1469 (c)(4)(H) has been added to minimize the release of fluids containing hexavalent chromium that adheres to parts when they are removed from a tank.
  - ✓ For facilities with automated lines, this is achieved by requiring the installation of drip trays placed between tanks so as to capture and return any hexavalent chromium laden liquids to the tank. Trays are required to be cleaned such that there is no accumulation of visible dust potentially contaminated with hexavalent chromium. This cleaning component is not found in the ATCM.
  - ✓ Facilities with manual lines are required to handle each electroplated or anodized part, or equipment used to handle such parts, so that chromic acid is not dripped outside the electroplating or anodizing tank, including associated process tanks. Furthermore, facilities spraying down parts above the tank to remove excess chromic acid from parts are required to have a splash guard installed at the tank to minimize overspray and ensure hexavalent chromium laden liquid is returned to the electroplating or anodizing tank. Splash guards are required to be cleaned such that there is no accumulation of visible dust potentially contaminated with hexavalent chromium. This cleaning component is not found in the ATCM.

Removal of Add-on Air Pollution Devices for Hard or Decorative Chromium Electroplating or Chromic Acid Anodizing Tanks

Currently, Rule 1469 requires in paragraph (c)(6) that add-on air pollution control devices installed prior to May 2, 2003 shall not be removed or rendered inoperable unless it is replaced by an add-on air pollution device meeting a higher control efficiency. Section 93102.5 of the state ATCM requires that replacement be by an add-on air pollution control device capable of meeting an emission limit of less than or equal to 0.0015 mg/ampere-hr. PAR 1469 has been amended to require replacement add-on air pollution control devices to be as effective as the previous control or meet the 0.0015 mg/ampere-hour emission limit, whichever is more effective. The date of May 2, 2003 has also been deleted and the provision now applies regardless of installation date.

Add-On Control Requirement for Hard Chromium Electroplating Tanks

Current Rule 1469 requires that all hard chromium electroplating tanks reduce hexavalent chromium emissions using add-on air pollution control devises unless the facility is a small operation that has applied for and received approval for an alternative requirement as specified in paragraph (d)(5). PAR 1469 has been amended to provide this option only as an interim alternative requirement, and only allows operating without add-on air pollution control devices under an approved alternative compliance method specified in (d)(6).

Training and Certification

This requirement has been relocated from paragraph (c)(12) to (c)(7) of PAR 1469. Initial training for new facilities to be completed within a period not to exceed two years of start-up has been added in subparagraph (c)(7)(A) of PAR 1469 as is it not addressed in the current rule.

Interim Emission Standards for Existing Facilities

In some cases, the compliance dates of new emission standards of existing facilities found in paragraph (c)(11) of PAR 1469 do not become effective for as long as 3 years. PAR 1469 (c)(8) through (c)(10) specifies the emission standards during the interim period and is identical to the existing standards in the current version of Rule 1469. Requirements such as alternative compliance options for current emission standards have been relabeled throughout PAR 1469 to clearly indicate that they are now for the interim period only.

Paragraph (c)(12) through (c)(14) of PAR 1469 contains new emission standards for existing, modified, and new chromium electroplating facilities and chromic acid anodizing facilities.

New Emission Standards for Existing Facilities

Below are the new emission rate standards for existing facilities that are set forth in PAR 1469 paragraph (c)(11)(A). The standards and implementation dates are identical to those found in the state ATCM.

Table 3-1: Hexavalent Chromium Emission Limits for Existing Tanks

Distance to Sensitive Receptor (meters)	Annual Permitted Ampere-hours	Emission Rate Limit (mg/ampere-hr)	Effective Date
≤ 100	≤ 20,000	0.01[2]	4/24/2008
≤ 100	> 20,000 and ≤ 200,000	0.0015[1]	10/24/2010
≤ 100	> 200,000	0.0015[1]	10/24/2009
> 100	≤ 50,000	0.01[2]	4/24/2008
> 100	> 50,000 and ≤ 500,000	0.0015	10/24/2011
> 100	> 500,000	0.0015[1]	10/24/2009

[1] Measured after add-on air pollution control device(s).

[2] Achieved through use of Certified Chemical Fume Suppressants. Alternatively, a facility may install an add-on air pollution control devices(s) that controls emissions to below 0.0015 mg/amp-hr.

Subparagraph (c)(11)(B) has been added to PAR 1469 with language identical to that of state ATCM Section 93102.4 (b)(2)(A). This subparagraph prescribes the method by which facilities are to measure distances to sensitive receptors and requires that this information be made

available to the District within 30 days of effective ATCM date October 24, 2007. This requirement of the ATCM has already been addressed by AQMD compliance staff.

Health Risk Assessment for Existing Facilities

Footnote 3 of Table 93102.4 found in Section 93102.4 (b)(1) of the state ATCM requires that owners or operators of an existing facility shall conduct a site specific risk analysis, including all toxic air contaminant emissions from the facility, when annual emissions exceed 15 grams of hexavalent chromium emissions unless a site specific risk analysis was already conducted and approved by the permitting agency.

Subparagraph (c)(11)(C) has been added to PAR 1469 to incorporate the risk analysis requirement of Section 93102.4 (b)(1) of the state ATCM, along with additional criteria for clarification. The new subparagraph requires the owner or operator of an existing facility to conduct a health risk assessment if annual hexavalent chromium emissions from the chromium electroplating or chromic acid anodizing operations exceed 15 grams in any calendar year beginning January 1, 2007. The calendar year was determined based on this ATCM requirement becoming effective in 2007. PAR 1469 will require facilities with annual emissions greater than 15 grams to submit a health risk assessment pursuant to District Rule 1402 subdivision (d) within 150 days of the end of the year during which the 15 gram limit was exceeded. CARB has determined that hexavalent chromium emissions of 15 grams per year could potentially cause exceedance of the action risk level of Rule 1402. If the health risk assessment shows that the maximum individual cancer risk from the facility is greater than 25 in a million, then the facility will be required to develop and implement a risk reduction plan pursuant to Rule 1402. If the risk is less than or equal to 25 in a million, there are no further requirements under Rule 1402 and the facility is required to comply with Rule 1469.

There are 7 facilities with hexavalent chromium emissions exceeding 15 grams per year. One of the seven is already in the AB2588 Toxics Hot Spots program and AQMD staff has already initiated the process of notifying the other six facilities to submit an HRA. There are 9 facilities (see figure ES-2) with an estimated cancer risk of greater than 25 in a million based on a Tier 2 risk analysis. Three of the facilities with greater 25 in a million risk overlap with the facilities with more than 15 grams/year of hexavalent chromium emissions and will be receiving notifications. Two of the facilities are already in AB2588 and the remaining four facilities are expected to have less than 25 in a million risk after adding controls required by PAR 1469.

The ATCM provides an option for facilities to use a health risk assessment previously approved by the District to demonstrate compliance. This option is provided in clause (c)(11)(C)(iii) of PAR 1469. The following additional criteria require that the analysis:

- Was conducted using the most current version of the risk assessment procedures of Rule 1402 subdivision (d); and
- Is representative of the chromium electroplating or chromic acid anodizing operating conditions for the subject year; and
- Was calculated using an annual hexavalent chromium emission amount that is equal to or greater than the amount of the subject year; and
- Used receptor locations and distances equal to those for the subject year.

Emission Standards for Modified Hexavalent Chromium Electroplating and Chromic Acid Anodizing Facilities

District Rule 1401 (d)(1) requires the use of Best Available Control Technology for Toxics (T-BACT) when the increase in hexavalent chromium emissions resulting from a facility modification exceeds a maximum individual cancer risk (MICR) of one in a million. An add-on air pollution device fitted with HEPA is the current form of T-BACT for the chromium electroplating industry and is assumed to meet an emission rate limit of 0.0015 mg/amp-hr.

Section 93102.4 (c)(1) of the state ATCM states that an existing facility that has undergone a modification as of October 24, 2007, resulting in *any* increase in hexavalent chromium emissions shall, upon start-up, control hexavalent chromium emissions by use of an add-on air pollution control device that meets an emission rate limit 0.0015 milligrams per ampere-hour or less. Modified facilities operating under an approved alternative compliance method already meeting an emission rate limit of 0.0015 mg/amp-hr are not required to exclusively use an add-on air pollution control device fitted with HEPA. This requirement is more stringent than current Rule 1469 and identical language to the state ATCM has been added in subparagraph (c)(12)(A) of PAR 1469 for equivalency.

Health Risk Assessment for Modified Facilities

Section 93102.4 (c)(2) of the state ATCM states that prior to initial start-up of a modified facility, when annual emissions of hexavalent chromium are expected to exceed 15 grams/year, the owner or operator shall conduct a site specific risk analysis in accordance with the permitting agency's procedures and including all toxic air contaminant emissions at the facility. Subparagraph (c)(12)(B) has been added to PAR 1469 to incorporate the risk analysis requirement of Section 93102.4 (c)(2) of the state ATCM, along with additional criteria for clarification. The new subparagraph requires modified facilities to conduct a facility-wide health risk assessment if the actual annual hexavalent chromium emissions from the chromium electroplating or chromic acid anodizing operations are expected to exceed 15 grams in any calendar year. The health risk assessment shall be conducted in accordance with the Risk Assessment Procedures of District Rules 1401 and 1402. The owner or operator will be required to submit the health risk assessment to the District 60 calendar days prior to initial start-up of discovery of modification.

Emission Standards for New Hexavalent Chromium Electroplating and Chromic Acid Anodizing Facilities

Section 93102.4 (d) of the state ATCM requires more stringent measures for new hexavalent chromium electroplating and chromic acid anodizing facilities than those provided in current Rules 1401 and 1469. As a result, the following provisions found in PAR 1469 (c)(13) have been added:

- No person shall operate a new facility located:
    - In an area zoned for residential or mixed use, and
    - Within 1,000 feet from the boundary of a sensitive receptor (*not included in ATCM*), a school under construction, or any area zoned for residential or mixed use.

- New facilities shall meet a hexavalent chromium emission rate of no more than 0.0011 milligrams/ampere-hour measured after use of a:
    - Certified chemical fume suppressant; with a
    - HEPA-fitted add-on air pollution control device; or an
    - Approved alternative compliance method provided in (d)(6) of PAR 1469.
- Prior to start-up, a new facility shall conduct a health risk assessment in accordance with the Risk Assessment Procedures of District Rules 1401 and 1402. The analysis shall be submitted 60 calendar days prior to initial start-up.

Decorative Chromium Electroplating Tanks Using a Trivalent Chromium Bath

This section found in paragraph (c)(14) of PAR 1469 retains the same set of emission standards as those found in current Rule 1469, however, new facilities are additionally required to conduct and submit in writing, a facility wide health risk assessment in accordance with the Risk Assessment Procedures of District Rules 1401 and 1402 prior to initial start-up.

Permit Application Submittals

PAR 1469 (c)(11) requires hexavalent chromium electroplating or chromic acid anodizing facilities to comply with an emission rate of 0.01 or 0.0015 mg/amp-hr based on proximities to sensitive receptors and permitted annual ampere-hour limits. Staff has identified a number of facilities that do not have a permitted annual ampere-hour limit with which to determine an applicable emission rate. There are also facilities with existing annual ampere-hour limits that are much higher than actual usages, and these facilities may opt to take a reduction in their ampere-hour limit to either continue compliance with the 0.01 mg/amp-hr emission limit, or delay the date of compliance with the 0.0015 mg/amp-hr emission limit.

In order to address these issues, PAR 1469 (c)(15)(A) has been added and requires that the aforementioned facility types submit permit applications for a change of operating condition. The owner or operator of the facility is to submit the application to the District by February 24, 2009. AQMD Rule 301 – Permit Fees, which was last amended on May 2, 2008, specifies that the permit fee rate is $670.50 for a change of operating condition that does not result in an emissions increase or where no engineering evaluation is necessary.

PAR 1469 (c)(15)(B) will further require that existing facilities installing new or modifying existing equipment necessary to comply with the new emission rates of (c)(11), submit all related permit applications to the District no later than 8 months prior to the facility's applicable effective compliance date. AQMD permitting staff feels that this would be the time necessary to process all the applications (~55 facilities) that are estimated to be received for the first compliance date of 10/24/09.

Alternative Compliance Options

Subdivision (d) of PAR 1469 sets forth alternative compliance options to the emission standards found in subdivision (c). Paragraphs (d)(1) through (d)(5) are alternative compliance options that were established in the previous rule amendment of Rule 1469, and have been relabeled as alternative interim compliance options. Existing facilities operating under one of these interim

alternative compliance options may only continue to do so until the compliance date for the new emission standards found in paragraph (c)(11) take effect.

Paragraph (d)(6) has been added to PAR 1469 and provides facilities the option to apply for an alternative compliance method to comply with the new emission standards of paragraphs (c)(11) through (c)(13). The facility is required to submit information demonstrating that the alternative method is:

- Enforceable;
- Provides an equal, or greater hexavalent chromium emission reduction than would direct compliance with PAR 1469 (c)(11) through (c)(13); and
- Provides an equal, or greater risk reduction than would direct compliance with PAR 1469 (c)(11) through (c)(13).

The facility would need to implement alternative methods, if approved, within the time periods specified in PAR 1469 (c)(11) for existing facilities and upon start-up for new and modified facilities. Further, they would also be required to comply with the general requirements of paragraphs (c)(1) through (c)(7), (c)(15); subdivisions (e) through (k), and (m); and Appendices 1 through 9.

Performance Test Requirements and Test Methods

Performance Test Requirements

The current version of Rule 1469 requires that facilities using add-on air pollution control devices, foam blanket chemical fume suppressants, or mechanical fume suppressants conduct a performance test demonstrating compliance with applicable emission standards within 180 days after initial start-up. PAR 1469 retains this requirement for existing facilities complying with interim emission standards, however, adds that existing facilities demonstrating compliance with the new emission standards set forth in PAR 1469 (c)(11) be done within 180 days after initial start-up or before the applicable effective dates in Table 1, whichever is sooner.

New and modified facilities are required to have a performance test conducted within 60 days after initial start-up. This requirement has been added to be consistent with state ATCM Section 93102.7 (a)(2).

Use of Existing Performance Test

Existing facilities demonstrating compliance with the new emission standards of PAR 1469 (c)(11) may use an existing performance test conducted after January 1, 2000 provided that it meets the following criteria:

1) Demonstrates compliance with the applicable emission limits of PAR 1469 (c)(11);
2) Represents currently used control methods at the time of proposed rule adoption; and
3) Was conducted using one of the approved test methods specified in PAR 1469 (e)(3).

This rule language has been added to PAR 1469 for consistency with state ATCM Section 93102.7 (b). PAR 1469 additionally sets a submission deadline date of February 24, 2009 for evaluation by the District's Compliance Division.

Pre-Test Protocol

Existing Rule 1469 requires that facilities subject to the performance test requirements of paragraph (e)(1) submit a pre-test protocol at least 60 days prior to conducting a performance test. This requirement has been retained for facilities that are conducting performance tests for newly installed or modified existing equipment. Facilities, however, that are conducting performance tests for existing equipment that require no modification are required to submit a pre-test protocol to the District's Compliance Division no later than 8 months prior to the applicable effective date in Table 2 of paragraph (c)(11).

Emission Points Test Requirements

Rule 1469 currently states that each facility emission point subject to the requirements of the rule is to be tested unless approval is received by the Executive Officer. State ATCM Section 93102.7 (e) additionally requires that this approval be accompanied with a waiver granted by U.S. EPA. This criteria has been added to PAR 1469 (e)(5).

Paragraph (e)(6) has been amended to additionally require facilities operating under an alternative compliance method pursuant to (d)(6), to conduct and submit a performance test pursuant to subdivision (e).

Capture Efficiency

Rule 1469 currently does not have any provision requiring ventilation systems associated with add-on air pollution control devices to demonstrate capture efficiency. PAR 1469 adds (e)(7) to require that emissions are captured by a District approved quantitative measurement. An example of an acceptable measurement provided in the rule is demonstrating that the capture system meets the design criteria and ventilation velocities specified in the American Conference of Governmental Hygienists Industrial Ventilation, A Manual of Recommended Practice.

PAR 1469 further requires that a test be conducted to periodically demonstrate the capture efficiency. The proposal is for a smoke test that is:

- Conducted initially upon start-up for new and modified facilities, and within 60 days of the effective date of PAR 1469 for existing facilities;
- Conducted periodically at least once every six months and within six months of a previous test;
- Conducted under conditions representative of typical facility electroplating and/or anodizing operations; and
- Recorded by photograph or video.

A smoke test that demonstrates non-compliance with paragraph (e)(7) would require immediate shutdown, upon discovery, of all electroplating or anodizing lines associated with such ventilation systems until a smoke test demonstrating full compliance is achieved. The smoke test would be conducted using the method provided in newly added Appendix 9 of PAR 1469, or through a method deemed acceptable by the Executive Officer.

Certification of Wetting Agent Chemical Fume Suppressants

Rule 1469 currently requires any wetting agent chemical fume suppressant used to comply with the emission standards in the rule to be certified by the Executive Officer. It is further required

to meet an emission limitation of 0.01 milligrams/ampere-hour and a surface tension of 45 dynes/cm or less.

Section 93102.8 (c) of the state ATCM requires that certified wetting agent chemical fume suppressants meet an emission limitation of below 0.01 milligrams/ampere-hour, and a surface tension below 45 dynes/cm if measured by a stalagmometer and below 35 dynes/cm if measured by a tensiometer. Although all chemical fume suppressants currently certified in the District meet the slightly more stringent certification criteria of the state ATCM, subdivision (f) of PAR 1469 has been amended to maintain certification requirements consistent with the ATCM.

Parameter Monitoring

Add-On Air Pollution Control Devices

Rule 1469 requires the owner or operator of add-on air pollution control devices to continuously monitor the inlet velocity pressure of a packed-bed scrubber. PAR 1469 extends this requirement to other add-on air pollution control devices such as composite mesh-pads, fiber-bed mist eliminator, and High Efficiency Particulate Arrestor (HEPA) filters. The additional measurement would serve as another means to ensure that add-on air pollution control device is operating as demonstrated during a performance test.

Wetting Agent Chemical Fume Suppressants

Facilities using certified fume suppressants as a means to reduce hexavalent chromium emissions are required to monitor the surface tension of the electroplating bath(s). Rule 1469 currently requires that surface tension measurements are to be measured daily for 20 operating days and weekly thereafter so long as there is no violation of the surface tension requirement.

State ATCM Section 93102.9 (d)(3) maintains this same requirement for existing facilities, however, it requires daily surface tension monitoring and measurement for facilities operating under an approved alternative compliance method using chemical fume suppressants as all or partial control of hexavalent chromium emissions. PAR 1469 (g)(2)(B) has been added to address this difference.

Inspection and Maintenance Requirements

The existing inspection and maintenance requirements for add-on air pollution devices in Rule 1469 is identical to that of the state ATCM's with the exception of those for custom designed add-on air pollution control devices. State ATCM Section 93102.10 (b) calls for a separate set of operation and maintenance requirements to be developed, submitted, and approved by the permitting agency. This provision has been added to PAR 1469 (h)(1).

Recordkeeping

Monitoring Data Records

Current Rule 1469 requires in (j)(4)(B) and (j)(4)(C) that the pressure drop and inlet velocity pressure be recorded once a week. PAR 1469 has amended these sections to require daily recordkeeping for these parameters.

Facilities operating under an approved alternative compliance method using chemical fume suppressants as all or partial control of hexavalent chromium emissions will also be required to record the surface tension of the electroplating or anodizing bath daily. This requirement has been added to PAR 1469 (j)(4)(D)(ii) to maintain consistency with state ATCM Section 93102.12 (c)(4)(C).

Records Demonstrating Facility Size

Rule 1469 (j)(7) provides procedures for determining the size of a facility based either on records of annual actual cumulative rectifier capacity or by taking a maximum cumulative potential rectifier usage limit. This provision has been omitted in PAR 1469 as there is no relevance or meaning to demonstrating a facility's size.

Records of Filter Purchase and Disposal

PAR 1469 adds a requirement for the owner or operator of sources using add-on air pollution control devices to retain purchase orders for filters and waste manifest records for filter disposal.

Reporting

Initial Compliance Status Report

Current Rule 1469 requires an initial compliance status report (ISCR) for existing facilities to be submitted no later than 30 calendar days after the effective date of the rule, and upon start-up for new facilities. State ATCM Section 93102.13 (b)(1) requires that existing facilities as of October 24, 2007 submit the ISCR no later than April 24, 2008, and for new facilities to submit upon start-up. PAR 1469 has amended subparagraph (k)(2)(A) to have identical timelines regarding ISCR submittals for existing facilities, and requires new facilities as of October 24, 2007 to submit the ISCR upon start-up. This amendment was made to eliminate submittal of redundant ISCRs by facilities. This requirement has already been implemented by the AQMD for existing facilities.

Notification of Compliance Status for Sources Currently Using Trivalent Chromium

Similar to the section above, current Rule 1469 requires a notification of compliance status (NOCS) for existing facilities to be submitted no later than 30 calendar days after the effective date of the rule. State ATCM Section 93102.13 (e)(1)(A) requires that existing facilities as of October 24, 2007 submit the NOCS no later than November 24, 2007. PAR 1469 has amended subparagraph (k)(5)(A) to have identical timelines regarding NOCS submittals for existing facilities as of October 24, 2007. Facilities existing as of October 24, 2007 will have to submit the NOCS within 30 days after the effective date of the PAR 1469. This amendment was made to eliminate submittal of redundant NOCSs by facilities.

Rule 1402 Inventory and Risk Requirements

The California Health and Safety Code section 44391 requires risk reduction for facilities where the District finds that there is a significant risk. Rule 1402 defines significant risk level to mean a cancer risk of 100 in one million or a total acute or chronic hazard index of 5.0 for any target organ system at any receptor location.

Therefore, in order to comply with State law, the District will require chromium electroplating and chromic acid anodizing facilities to go through the Rule 1402 process if their facility risk from all toxic air contaminants exceeds these thresholds. This has been added in subdivision (p) of PAR 1469.

Chromium Electroplating or Chromic Acid Anodizing Kits Requirements

State ATCM Section 93102.15 sets forth provisions for the use, sale, supply, offer for sale, or manufacture for sale of any chromium electroplating or chromic acid anodizing kit in California. This section has been added as subdivision (q) in PAR 1469 and applies to aforementioned activities in the District. The provision bans the sale of kits to facilities which are not permitted by the AQMD.

Appendices

All additions and amendments to the following appendices have been made in order to provide consistency with state ATCM Section 93102.16 Appendices 1 through 9.

Appendix 1 – Content of Performance Test Reports

- Item number 4 has been amended to require the results of performance test reports pursuant to subdivision (e) be in milligrams/ampere-hour.

Appendix 2 – Content of Initial Compliance Status Reports

- Item number 2 has been amended to provide commercial/industrial and sensitive receptor distances derived from measurement methods set forth in PAR 1469 (c)(11)(B).
- New item number 9 (PAR 1469) has been added to require applicable facilities to submit the test report for the initial smoke test demonstrating the capture efficiency of ventilation systems.
- Item number 10 has been amended to specify that hazardous air pollutants emitted by the source be quantified in pounds.
- Item number 14 has been omitted as determining a facility's size as small or medium has no reference or meaning in PAR 1469.
- New item number 15 (PAR 1469) has been added to require a facility to report the actual cumulative ampere-hour usage expended during the preceding calendar year, if operation occurred.
- New item number 16 (PAR 1469) has been added to require a statement that the owner or operator, or personnel designated by the owner or operator, has completed a District-approved training program pursuant to paragraph (c)(7).

Appendix 3 – Content of Ongoing Compliance Status Reports

- Item number 8 has been amended to require reporting of hexavalent and trivalent chromium "emissions data" rather than "throughput data". The amount reported is also required to be in "grams" rather than "pounds".
- Item number 9 has been amended to provide sensitive receptor locations rather than distances from the facility. A statement has also been added to require measurements to be made using methods set forth in PAR 1469 (c)(11)(B).

- New item number 13 (PAR 1469) has been added to provide results of periodic smoke test demonstrating capture efficiency of ventilation system(s) conducted during the reporting period.
- New item number 15 (PAR 1469) has been added to has been added to require a statement that the owner or operator, or personnel designated by the owner or operator, has completed a District-approved training program pursuant to paragraph (c)(7).

Appendix 8 – Information Demonstrating an Alternative Method(s) of Compliance Pursuant to Paragraph (d)(6)

- This appendix has been added to set forth criteria for information required for a facility to apply for approval of an alternative method of compliance.

Appendix 9 – Smoke Test to Demonstrate Capture Efficiency for Ventilation Systems of Add-on Air Pollution Control Devices Pursuant to Paragraph (e)(7)

- This appendix has been added to set forth smoke test methods to demonstrate capture efficiency for ventilation systems of add-on air pollution devices.

CHAPTER 4: IMPACT ASSESSMENT

DATA RESOURCES

Data resources used to assess impacts from PAR 1469 include AQMD permits, compliance records, information from AQMD's AB2588 air toxics program, source test reports, and AQMD's Annual Emission Reporting program.

In October 2002, AQMD compliance personnel visited approximately 130 facilities conducting chromium electroplating and chromic acid anodizing, in order to collect site-specific data (e.g., stack and building height, distances to nearest businesses, residences, and sensitive receptors). This collected data, updated with information contained within Rule 1469 Ongoing Compliance Status Reports from years 2005 through 2007, was used to conduct the screening risk assessment described in the Tier 2 screening risk assessment methodology specified in AQMD's "Risk Assessment Procedures for Rules 1401 and 212."

AQMD permitting data was also analyzed to obtain the following information:
- ✓ Chromium electroplating and chromic acid anodizing line and process descriptions;
- ✓ Tank sizes and exhaust stack heights;
- ✓ Permitted annual ampere-hour limits;
- ✓ Emission rate limits;
- ✓ Current elected compliance options; and
- ✓ Existing emission controls, including add-on control and fume suppressants.

EMISSION RATE IMPACT

Using the data sources described in the above section, staff analyzed the current operating scenario of each facility and determined how many would be affected in terms of changes to current emission rates. A review of the hexavalent chromium electroplating and chromic acid anodizing industry yields the following information relative to the potential emission rate impacts of the proposed rule requirements of PAR 1469:

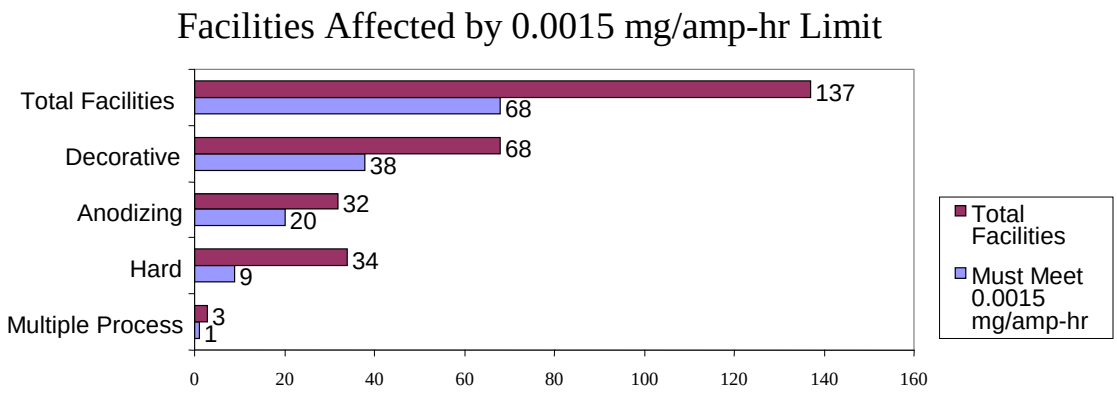
- There are approximately 137 facilities conducting either hexavalent chromium electroplating or chromic acid anodizing operations using a total of 271 tanks, as follows:
  - ✓ 34 facilities have 130 hard hexavalent chromium electroplating tanks;
  - ✓ 68 facilities have 84 decorative hexavalent chromium electroplating tanks; and
  - ✓ 32 facilities have 38 chromic acid anodizing tanks.
  - ✓ 3 facilities conduct more than one type of hexavalent chromium electroplating or chromic acid anodizing operation, consisting of 12 hard hexavalent chromium electroplating tanks, 3 decorative hexavalent chromium electroplating tanks, and 4 chromic acid anodizing tanks.
- Of the universe of sources, an estimated 68 facilities (102 tanks) will be required to meet a minimum emission limit of 0.0015 mg/amp-hr, as follows:
  - ✓ 9 facilities have 29 hard hexavalent chromium electroplating tanks;
  - ✓ 38 facilities have 45 decorative hexavalent chromium electroplating tanks;
  - ✓ 20 facilities have 24 chromic acid anodizing tanks;

- ✓ 1 facility conducting multiple hexavalent chromium electroplating processes has 3 decorative chromium electroplating tanks and 1 chromic acid anodizing tank.

- There are 12 facilities (23 tanks) with 13 existing air pollution control devices venting hexavalent chromium electroplating or anodizing operations that are anticipated to have to be redesigned or upgraded to meet the more stringent proposed rule limits.
- There is 1 facility with 13 enclosed hard chromium electroplating tanks that will need to redesign or upgrade controls to meet the 0.0015 mg/amp-hr limit.
- The remaining 55 facilities (66 tanks) currently only have in-tank controls and are expected to have to install an estimated 56 air pollution control systems to meet the emission rate of 0.0015 mg/amp-hr.

It should be noted that 4 of the 68 impacted facilities were evaluated using the actual annual ampere-hour usage rather than the permitted annual ampere-hour limit due to the absence of a permitted limit. Among the 68 facilities impacted, 56 will be required to comply with the new emission rate by 10/24/2009, 2 by 10/24/2010, and 10 by 10/24/2011. Figure 4-1 below shows the emission rate impact within process types.

Figure 4-1



	Mulitple Process	Hard	Anodizing	Decorative	Total Facilities
Total Facilities	3	34	32	68	137
Must Meet 0.0015 mg/amp-hr	1	9	20	38	68

BASELINE EMISSIONS

Baseline hexavalent chromium emissions were also calculated in order to determine emissions reductions after implementation of PAR 1469. The emissions for each facility were calculated by multiplying the actual annual ampere-hour usage with the facility's emission rate. Actual annual ampere-hour usage was determined by using the higher of the facility's 2006 or 2007 annual ampere-hour usage. Current emission rates were determined using values obtained from facility source tests, when applicable, or by using the most stringent emission rate required for a facility based on AQMD Compliance Plans, permits, and Rule 1469. Baseline hexavalent chromium emissions in the Basin were calculated to be 2.22 lbs/yr and 1.35 lbs/yr after

implementation of PAR 1469 for a reduction of 0.87 lbs/yr, approximately a 40 percent reduction in emissions. This amount does not take into account reductions of fugitive emissions resulting from new provisions in PAR 1469, such as more stringent housekeeping requirements. It should also be noted that the reductions in hexavalent chromium emissions are more critical at a localized level as opposed to a regional level. Reductions at this scale are put into better perspective when used in combination with cancer risk reductions calculated at the localized level.

HEXAVALENT CHROMIUM CANCER RISK REDUCTION

Screening Risk Assessment Approach and Assumptions

Each of the 137 facilities was analyzed to estimate maximum individual cancer risk (MICR) for hexavalent chromium from chromium electroplating and chromic acid anodizing operations. Worker, residential, and sensitive receptor risks were calculated for hexavalent chromium using the Tier 2 screening risk assessment methodology specified in AQMD's "Risk Assessment Procedures for Rules 1401 and 212." Facility information collected by AQMD compliance personnel in October 2002, updated with 2005 through 2007 Rule 1469 Ongoing Compliance Status Reports, was used in place of defaults for distance-specific dispersion factors (X/Q) for worker, residential, and sensitive receptors and meteorological correction factor (MET).

Worker, residential, and sensitive receptor exposures were assessed, based on the following assumptions for each facility:

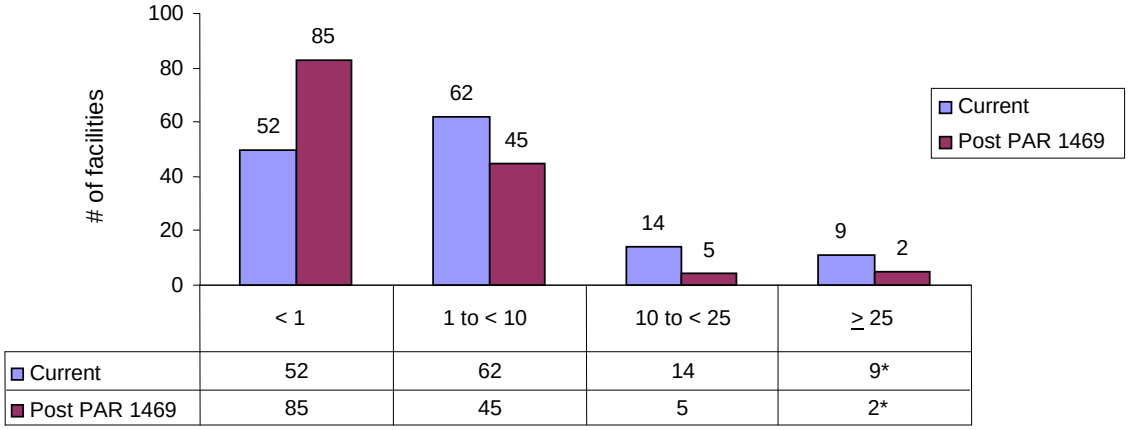
- ✓ Worker, residential, and sensitive receptor exposures were calculated using actual receptor distances;
- ✓ Emissions from hard chromium electroplating operations were modeled as point source emissions since hard chromium electroplating operations are required to have add-on control devices;
- ✓ Emissions from decorative chromium electroplating operations and chromic acid anodizing operations were modeled as volume sources, since they are not required to have add-on control devices; and,
- ✓ For each modeling scenario, whether point or volume source, the meteorological corrector factor (MET) for the nearest AQMD monitoring station to each facility was used.

Risk Reduction

Using the methodology for estimating emissions and cancer risk as described in this chapter and in Appendix A, baseline cancer risks were estimated for electroplating facilities emitting hexavalent chromium in the Basin. Figure 4-2 shows the number of facilities in each risk category by electroplating type. Many facilities, although currently regulated by the NESHAP and by existing Rule 1469, still have elevated cancer risks.

Figure 4-2

Risk Reduction (in a million) of Chromium Electroplating and Chromic Acid Anodizing Facilities Post PAR 1469



	< 1	1 to < 10	10 to < 25	≥ 25
Current	52	62	14	9*
Post PAR 1469	85	45	5	2*

As the figure shows, the estimated cancer risks from over 94% of all facilities are expected to fall below a cancer risk of 10 in a million and 98.5% falling below the Rule 1402 action level of 25 in a million. PAR 1469 will require facilities with annual emissions greater than 15 grams to submit a health risk assessment pursuant to District Rule 1402 subdivision (d) within 150 days of the end of the year during which the 15 gram limit was exceeded. CARB has determined that hexavalent chromium emissions of 15 grams per year could potentially cause exceedance of the action risk level of Rule 1402. If the health risk assessment shows that the maximum individual cancer risk from the facility is greater than 25 in a million, then the facility will be required to develop and implement a risk reduction plan pursuant to Rule 1402. If the risk is less than or equal to 25 in a million, there are no further requirements under Rule 1402 and the facility is required to comply with Rule 1469.

There are 7 facilities with hexavalent chromium emissions exceeding 15 grams per year. One of the seven is already in the AB2588 Toxics Hot Spots program and AQMD staff has already initiated the process of notifying the other six facilities to submit an HRA. There are 9 facilities (see figure ES-2) with an estimated cancer risk of greater than 25 in a million based on a Tier 2 risk analysis. Three of the facilities with greater 25 in a million risk overlap with the facilities with more than 15 grams/year of hexavalent chromium emissions and will be receiving notifications. Two of the facilities are already in AB2588 and the remaining four facilities are expected to have less than 25 in a million risk after adding controls required by PAR 1469.
Impact Assessment for rule 1469

A technical analysis of the hexavalent chromium electroplating (hard and decorative) and chromic acid anodizing industry under AQMD jurisdiction is being conducted to evaluate potential economic and environmental impacts of PAR 1469. The following impact analysis is based on achieving the more stringent proposed rule limits for both hard and decorative

chromium electroplating, as well as chromic acid anodizing. Current facility-level operations were used in evaluating the potential impacts.

Implementation of PAR 1469 would result in a net environmental benefit due to the further reduction of hexavalent chromium emissions and associated health risk. However, potential cost and environmental impacts may occur in association with the installation of air pollution control devices or other measures to control hexavalent chromium emissions.

Add-on Air Pollution Control Device Upgrade

Of the 68 facilities required to meet an emission rate of 0.0015 mg/amp-hr, it was determined that 65 facilities would either install new air pollution control devices or retrofit existing air pollution control devices. The most conservative case was assumed to be the installation or retrofit to an air pollution control device fitted with HEPA filters. For estimating HEPA systems required to comply with PAR 1469, an evaluation of existing and anticipated add-on controls for the 65 impacted facilities was completed. The number of HEPA systems to be installed was determined to be 56 systems for new installation and 10 systems for retrofits.

Performance Tests

Staff has conducted a preliminary analysis of facilities required to conduct a performance test to demonstrate compliance with the proposed emission limitations. It is estimated that a total of 109 facilities would be required to either re-source test existing air pollution control devices or conduct initial performance tests for new installations to demonstrate compliance with the 0.0015 mg/amp-hr emission rate limit. 31 of these facilities had no available source test data, and it is assumed that these facilities would need a source test conducted pursuant to PAR 1469.

Housekeeping Controls

Less than 10 percent of all hexavalent chromium electroplating and chromic acid anodizing facilities were found to have automated process lines. It is estimated that an average of 2 drip trays per facility will be required to be installed at these types of facilities per housekeeping requirements of the proposed rule.

Compliance Plan or Permit Application Submittals

It is anticipated that 65 of the 68 facilities that are required to meet the emission rate limit of 0.0015 mg/amp-hr would be installing new air pollution control devices or modifying existing units, and therefore would be submitting permit applications in lieu of a compliance plan. It is estimated that the remaining 72 facilities would be submitting a Compliance Plan in order to revise permit conditions based on the proposed rule.

SOCIOECONOMIC ASSESSMENT

Compliance with PAR 1469 will result in additional costs related to the control of hexavalent chromium emissions as outlined in the proposed amended rule. These costs would include the capital and annual operating costs of add-on air pollution control devices, source testing, housekeeping controls, and costs associated with compliance plans and permit modification applications. A socioeconomic assessment pursuant to Health and Safety Code Section 40440.8

and 40728.5 is currently being conducted to analyze the costs associated with compliance under PAR 1469. This document will be available 30 days prior to the hearing for the proposed amendments.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

Pursuant to the California Environmental Quality Act (CEQA) and the AQMD's Certified Regulatory Program (Rule 110), the AQMD will prepare appropriate CEQA documentation for the proposed amendments to Rule 1469. Upon completion, the CEQA document will be released for public review and comment, and will be available at AQMD Headquarters, by calling the AQMD Public Information Center at (909) 396-2039, or by accessing AQMD's CEQA website at: www.aqmd.gov/ceqa.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings

California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report.

Necessity

A need exists to amend current Rule 1469 to implement the more stringent measures of the CARB Airborne Toxic Control Measure for Chromium Plating and Chromic Acid Anodizing Facilities, effective as of October 24, 2007, and to protect public health by reducing exposure to hexavalent chromium emissions.

Authority

The AQMD Governing Board has authority to amend existing Rule 1469 pursuant to the California Health and Safety Code Sections 39002, 39650 et. seq., 40000, 40001, 40440, 40441, 40702, 40725 through 40728, 41508, 41700, and 44390 through 44394.

Clarity

Proposed Amended Rule 1469 is written or displayed so that its meaning can be easily understood by the persons directly affected by it.

Consistency

Proposed Amended Rule 1469 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

Non-Duplication

Proposed Amended Rule 1469 will not impose the same requirements as any existing state or federal regulations (except that it implements ATCM provisions). The proposed amendment is necessary and proper to execute the powers and duties granted to, and imposed upon, AQMD.

Reference

By adopting Proposed Amended Rule 1469, the AQMD Governing Board will be implementing, interpreting or making specific the provisions of the California Health and Safety Code Sections 41700 (nuisance), 39666 (Adoption of Airborne Toxic Control Measures), 44390 et seq. (Risk Reduction Audits and Plans), and Federal Clean Air Act Section 112 (Hazardous Air Pollutants).

Health and Safety Code Section 40727.2

Health and Safety code section 40727.2 requires a comparative analysis. This analysis may be found in Appendix A.

Rule Adoption Relative to Cost-effectiveness

Health and Safety Code Section 40922 requires that a cost-effectiveness ranking of available and proposed control measures is to be assessed for plans prepared pursuant to and Health and Safety Code, Part 3, Chapter 10. Proposed Amended Rule 1469 is not a control measure in the 2007 Air Quality Management Plan (AQMP) and thus, was not ranked by cost-effectiveness relative to other AQMP control measures in the 2007 AQMP. Furthermore, pursuant to Health and Safety Code Section 40910, cost-effectiveness in terms of dollars per ton of pollutant reduced is only applicable to rules regulating ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide and not to toxic air contaminants.

Incremental Cost-effectiveness

Health and Safety Code Section 40920.6 requires an incremental cost effectiveness analysis for Best Available Retrofit Control Technology (BARCT) rules or emission reduction strategies when there is more than one control option which would achieve the emission reduction objective of the proposed amendments, relative to ozone, CO, SOx, NOx, and their precursors. Since the proposed amended rule applies to toxic air contaminants, the incremental cost effectiveness analysis requirement does not apply.

AQMP and Legal Mandates

Proposed Amended Rule 1469 is not a measure in the AQMP. Proposed Amended Rule 1469 is an air toxic rule that would implement the requirements of the CARB ATCM.

REFERENCES

REFERENCES

American Conference of Governmental Industrial Hygienists, 2004. Industrial Ventilation, A Manual of Recommended Practice.

California Air Resources Board, 2006. Staff Report: Initial Statement of Reasons for Proposed Amendments to the Hexavalent Chromium Airborne Toxic Control Measure for Chrome Plating and Chromic Acid Anodizing Operations.

California Air Resources Board, 2006. Final Statement of Reasons for Rulemaking Including Summary of Comments and Agency Responses – Public Hearing to Consider Proposed Amendments to the Hexavalent Airborne Toxic Control Measure for Chrome Plating and Chromic Acid Anodizing Operations.

California Air Resources Board, 2007. Final Regulation Order – Airborne Toxic Control Measure for Chromium Plating and Chromic Acid Anodizing Facilities.

South Coast Air Quality Management District, July 1, 2005. Risk Assessment Procedures for Rules 1401 and 212, Version 7.0.

South Coast Air Quality Management District, April 2003. Staff Report, "Proposed Amended Rule 1469 Hexavalent Chromium Chrome Plating and Chromic Acid Anodizing and Proposed Rule 1426 Emissions From Metal Finishing Operations".

APPENDIX A: FEDERAL AND STATE RULES THAT APPLY TO EQUIPMENT AND SOURCES SUBJECT TO PAR 1469

FEDERAL AND STATE RULES THAT APPLY TO EQUIPMENT AND SOURCES SUBJECT TO PAR 1469

The following regulations are compared to PAR 1469 in this analysis:

- Federal – National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks (NESHAP)
- State – Airborne Control Toxic Measures for Hexavalent Chromium Emissions from Chromium Plating and Chromic Acid Anodizing Facilities (ATCM)

	NESHAP	ATCM	PAR 1469
Applicability	Chromium electroplating and chromium anodizing tanks at facilities performing hard or decorative chromium electroplating, or chromium anodizing.	Owner or operator of any facility performing hard or decorative chromium electroplating, or chromic acid anodizing.	Chromium electroplating or chromic acid anodizing tanks at facilities performing hard or decorative chromium electroplating, or chromic acid anodizing.
Emission Rate Standards	Hard Hexavalent Chromium Electroplating • Small Facility: ✓ ≤ 0.03 mg/dscm (existing); or ✓ ≤ 0.015 mg/dscm (new); or ✓ ≤ 45 dynes/cm surface tension (stalagmometer), or ≤ 35 dynes/cm surface tension (tensiometer). • Large Facility: ✓ ≤ 0.015 mg/dscm; or ✓ ≤ 45 dynes/cm surface tension (stalagmometer), or ≤ 35 dynes/cm surface tension (tensiometer).	Hard and Decorative Hexavalent Chromium Electroplating, and Chromic Acid Anodizing • Existing Facility ≤ 330 feet of sensitive receptor: ✓ ≤ 0.01 mg/amp-hr if annual permitted amp-hr limit is ≤ 20,000; or ✓ ≤ 0.0015 mg/amp-hr. • Existing Facility > 330 feet of sensitive receptor: ✓ ≤ 0.01 mg/amp-hr if annual permitted amp-hr limit is ≤ 50,000; or ✓ ≤ 0.0015 mg/amp-hr.	Hard and Decorative Hexavalent Chromium Electroplating, and Chromic Acid Anodizing Same as ATCM.

	NESHAP	ATCM	PAR 1469
Emission Rate Standards (cont)	Decorative Hexavalent Chromium Electroplating and Chromic Acid Anodizing • ≤ 0.01 mg/dscm; or • ≤ 45 dynes/cm surface tension (stalagmometer), or ≤ 35 dynes/cm surface tension (tensiometer).	• Modified Facility: ✓ ≤ 0.0015 mg/amp-hr. • New Facility: ✓ ≤ 0.0011 mg/amp-hr.	
Emission Rate Standards for Hard Hexavalent Chromium Electroplating Tanks with Enclosed Hoods	• Small Facility: ✓ ≤ 0.03 mg/dscm (existing); or ✓ ≤ 0.015 mg/dscm (new); or ✓ ≤ 45 dynes/cm surface tension (stalagmometer), or ≤ 35 dynes/cm surface tension (tensiometer); or ✓ Total chromium mass rate below allowable small facility mass emission rate. • Large Facility: ✓ ≤ 0.015 mg/dscm; or ✓ ≤ 45 dynes/cm surface tension (stalagmometer), or ≤ 35 dynes/cm surface tension (tensiometer);	• ≤ 0.0015 mg/dscm; or • Use a certified chemical fume suppressant and maintain the electroplating bath solution at the certified tension; or • Maintain total chromium mass rate below allowable mass emission rate.	Same requirements as those for open surface (above) decorative and hard hexavalent chromium electroplating and chromic acid anodizing tank(s).

	NESHAP	ATCM	PAR 1469
Emission Rate Standards for Hard Hexavalent Chromium Electroplating Tanks with Enclosed Hoods (cont)	or • Total chromium mass rate below allowable large facility mass emission rate.		
Emission Rate Standards for Trivalent Chromium Electroplating	Incorporate wetting agent as trivalent chromium bath ingredient; or comply with emission rate standards for decorative hexavalent chromium electroplating and chromic acid anodizing tanks.	Incorporate wetting agent as trivalent chromium bath ingredient; or comply with emission rate standard of ≤0.01 mg/dscm.	Same as ATCM.
Alternative Compliance Methods	None specified.	The owner or operator of a facility may use an alternative compliance method approved by the permitting agency , that achieves an equal, or greater amount of reduction in hexavalent chromium emissions and an equal, or greater reduction in risk than would be achieved by direct compliance with set requirements of the rule.	Same as ATCM.
Requirements for Removal of Add-on Pollution Control Device(s)	None specified	Add-on air pollution control device(s) installed before October 24, 2007, shall not be removed or rendered inoperable unless it is replaced by an add-on air pollution control device(s) meeting an emission rate of 0.0015	Add-on air pollution control devices for hard or decorative chromium electroplating or chromic acid anodizing tanks shall not be removed or rendered inoperable unless it is replaced by air pollution control

	NESHAP	ATCM	PAR 1469
Requirements for Removal of Add-on Pollution Control Device(s) (cont)		mg/amp-hr or less.	techniques meeting a higher control efficiency than previous, or an emission rate of 0.0015 milligrams per ampere-hour or less, whichever control efficiency is more effective.
Additional Requirements for New and Modified Hexavalent Chromium Electroplating and Chromic Acid Anodizing Facilities	None specified.	<u>New Facilities</u> • Must be located outside of an area that is zoned for residential or mixed use and located at least 1000 feet from the boundary of any area that zoned for residential or mixed use, or any school or school under construction. • Install a HEPA add-on air pollution control device (unless using an approved alternative compliance method). • Meet an emission rate of 0.0011 mg/amp-hr. <u>Modified Facilities</u> • Use add-on air pollution devices(s) to control hexavalent chromium emissions (unless using an approved alternative compliance	Same as ATCM.

	NESHAP	ATCM	PAR 1469
Additional Requirements for New and Modified Hexavalent Chromium Electroplating and Chromic Acid Anodizing Facilities (cont)		method). • Meet an emission limit of at least 0.0015 mg/amp-hr.	
Site Specific Risk Analysis	None specified.	• Existing Facilities – conduct when annual emissions annual emissions of hexavalent chromium exceed 15 grams. • Modified and New Facilities – conduct prior to initial start-up.	Same as ATCM with additional criteria for submittal timelines for existing facilities.
Housekeeping Requirements **Housekeeping**	None specified.	• Store chromic acid powder or flakes in a closed container in an enclosed storage area; • Transport chromic acid powder or flakes from enclosed storage area in a closed container; • Clean or contain spilled liquid or solid material containing hexavalent chromium within one hour to minimize trackout; • Clean at least once	Same as ATCM with addition of drip trays and splash guards to be cleaned such that there is no accumulation of dust potentially containing hexavalent chromium. Air compressed cleaning operations are also prohibited at or adjacent to the hexavalent chromium electroplating or anodizing operations.

	NESHAP	ATCM	PAR 1469
Requirements (cont)		every seven days surfaces within the enclosed storage area, open floor area, walkways around the electroplating or anodizing tank(s), or any surface potentially contaminated with hexavalent chromium, that accumulates or potentially accumulates dust; • Store, dispose, recover, or recycle chromium or chromium containing wastes generated from housekeeping activities using practices that do not lead to fugitive dust and in accordance with hazardous waste requirements. • Separate buffing, grinding, or polishing areas within a facility by installing a physical barrier. • Minimize dragout from hexavalent chromium electroplating and chromic acid anodizing tank(s) by installing drip trays for facilities with automated	
Housekeeping			

	NESHAP	ATCM	PAR 1469
Requirements (cont)		lines, or by handling electroplated or anodized parts such that chromic acid is not dripped outside of the electroplating tank. • Facilities without automated lines that spray down parts over the electroplating or anodizing tank(s) shall install splash guards.	
Training and Certification **Training and Certification**	None specified.	Required no later than October 24, 2009, and within every two years thereafter. The owner or operator of a facility shall ensure that chromium electroplating or chromic acid anodizing operations are conducted under the direction of the owner or operator or current employee who is onsite and who has completed the Air Resources Board (ARB) Compliance Assistance Training Course pertaining to chromium electroplating and chromic acid anodizing; On or after October 24, 2009, environmental compliance and recordkeeping required by this ATCM shall be conducted only by	Chromium electroplating personnel responsible for environmental compliance, maintaining electroplating bath chemistries, and testing and recording electroplating bath surface tension data shall complete a District-approved training program every two years. Initial training shall have been completed prior to May 1, 2004 for facilities existing before that time. For new facilities, initial training must be completed within a period not to exceed two years of start-up.

	NESHAP	ATCM	PAR 1469
(cont)		persons who completed an ARB Compliance Assistance Training Course.	
Permit Application Submittal Requirements	None specified.	None specified.	Permit applications for all equipment necessary to comply with new emission rates for existing facilities, are to be submitted no later than 8 months prior to the facility's applicable compliance date.
Performance Test Requirements	Initial test required to demonstrate compliance with emission rate standards except for chromium electroplating or chromic acid anodizing tanks using wetting agent chemical fume suppressants for sole method of compliance.	Same as NESHAP.	Same as ATCM and additionally requires pre-test protocol submittal requirements and periodic smoke tests to demonstrate capture efficiency of ventilation systems associated with add-on air pollution control devices.
Certification of Wetting Agent Chemical Fume Suppressants	Certification not required. Only specifies that when a wetting agent chemical fume suppressant is used, maintain surface tension to $\leq$ 45 dynes/cm (stalagmometer) or $\leq$ 35 dynes/cm (tensiometer).	Certify wetting agent chemical fume suppressants to achieve a surface tension level at which an emission factor of $\leq$ 0.01 mg/amp-hr is achieved. Wetting agent chemical fume suppressants must additionally meet a surface tension of < 45 dynes/cm (stalagmometer) or < 35 dynes/cm	Same as ATCM.

	NESHAP	ATCM	PAR 1469
Certification of Wetting Agent Chemical Fume Suppressants (cont)		(tensiometer).	
Monitoring	Add-on Air Pollution Control Devices Daily pressure drop and inlet velocity monitoring and recording. Chemical Fume Suppressants Monitor and record surface tension of electroplating baths once every 40 hours of operation.	Add-on Air Pollution Control Devices Continuous pressure drop and inlet velocity monitoring. Record once a week. Chemical Fume Suppressants Monitor and record surface tension of electroplating baths weekly.	Add-on Air Pollution Control Devices Same as ATCM, but daily recordkeeping of pressure drop and inlet velocity. Chemical Fume Suppressants Same as ATCM.
Inspection and Maintenance Requirements for Control Devices	• Visually inspect control devices for proper drainage, unusual chromic acid buildup, and structural integrity. • Visually inspect ductwork for leakage. • Perform washdown of composite mesh-pads, composite mesh-pads/packed-bed scrubbers, and fiber bed mist eliminators according to manufacturer recommendations. • Add fresh make-up water to the top of packed-beds whenever makeup water is added.	Same as NESHAP.	Same as ATCM.

	NESHAP	ATCM	PAR 1469
Recordkeeping *Inspection Records for Air Pollution Control and Monitoring Equipment Inspection Records for Air Pollution Control and Monitoring Equipment*	Maintain inspection records for add-on air pollution control device(s) and monitoring equipment to document that the inspection and maintenance required has taken place.	Same.	Same.
Performance Tests	Maintain test reports that document results of all performance tests.	Maintain test reports documenting the condition and results of all performance tests.	Same as ATCM.
Excesses and Breakdowns	• Maintain records for each period of excess emission of the process, add-on control, or monitoring equipment. • Maintain records of the occurrence, duration, and cause of each malfunction of process, add-on air pollution control, and monitoring equipment.	• Maintain records of emissions exceeding the emission limitation, monitoring parameter values, and any site-specific operating parameters established for alternative equipments. Include the date of occurrence, duration, cause, and magnitude of the excess. • Maintain records of the occurrence, duration, and cause and action taken on each breakdown.	Same as ATCM.
Cumulative Rectifier Usage	• Maintain records showing total process operating time of the source. • If actual rectifier	Maintain monthly records of total ampere-hour use per calendar year.	Record the actual cumulative rectifier usage expended during each month of the reporting period, and

	NESHAP	ATCM	PAR 1469
Cumulative Rectifier Usage (cont)	capacity is used to determine facility size, records of actual cumulative rectifier capacity of hard chromium tanks expended each month, and the total expended to date for the reporting period.		the total usage expended to date.
Chemical Fume Suppressant Additions	Maintain records of date and time that fume suppressant are added to baths.	Maintain records showing the date, time, volume and product identification of the fume suppressant added to the electroplating or anodizing bath.	Same as ATCM.
Trivalent Chromium Process Components	Maintain records of bath components purchased with the wetting agent clearly identified as a bath constituent contained in one of the components.	Same.	Same.
Filter Purchase and Disposal	None specified.	None specified.	Retain purchase orders for filters and waste manifests for disposal.
Requirements for Recordkeeping Waivers	Maintain records demonstrating whether a source is meeting the requirements for a waiver of recordkeeping or reporting requirements, if a source has been granted a waiver.	Includes a process for obtaining approval of alternative requirements.	Same as ATCM.

	NESHAP	ATCM	PAR 1469
Housekeeping Requirements	None specified.	Maintain records demonstrating compliance with housekeeping practices, including dates on which specific activities were completed.	Same as ATCM.
Records Retention	Maintain records for a period of five years.	Maintain records for five years, at least two years onsite.	Same as ATCM.
Reports *Initial Notification & Notification of Compliance Status* *Initial Notification & Notification of Compliance Status (cont)*	Submit initial notification and Notification of Compliance Status.	Submit Initial Compliance Status Report (ISCR). Information required contained within the report is consistent with that of both the NESHAP Initial Notification and the Notification of Compliance Status Report. The ISCR additionally requires sensitive receptor distances to the facility.	Same as ATCM.
Ongoing Compliance Status Reports	Semi-annual Ongoing Compliance Status Reports for major sources (except when the emission limit has been exceeded, then quarterly reports shall be submitted).	Annual Ongoing Compliance Status and Emission Reports (OCSR) for all sources required (excluding facilities conducting only trivalent chromium processes). Additional information required in OCSR is actual cumulative rectifier usage for the reporting period on a month-by-month basis; throughput data in pounds per year; and sensitive receptor distances.	Same as ATCM.

	NESHAP	ATCM	PAR 1469
Reports Associated with Trivalent Chromium Baths	Submit initial notification stating a wetting agent will be used to comply; list of bath components that comprise the bath, with the wetting agent clearly identified. Facilities changing to a trivalent chromium electroplating process must submit within 30 days, a report that describes the manner in which the process has been changed and the emission limitation, if any, now applicable to the affected source.	Same as NESHAP.	Same as ATCM.
Performance Test Notification and Results	Notify the Administrator in writing intention to conduct a performance test at least 60 calendar days before the test is scheduled to begin. Report performance test results within 90 days following the completion.	Same as NESHAP.	Same as ATCM.
Requirements for Chromium Electroplating or Chromic Acid Anodizing Kits	None specified.	No person shall sell, supply, offer for sale, or manufacture for sale in California, chromium electroplating or chromic acid anodizing kits unless to the owner or operator of a permitted facility at which chromium electroplating and chromic acid anodizing is performed.	Same as ATCM, however, applicability limited to the District rather than California.

APPENDIX B: PROPOSED AMENDED RULE 1469

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