Appendix - Adopted Rules

1. ARB

2. BAAQMD Rule 11-8

3. SCAQMD Rule 1169

ARB Adopted Rule

APPENDIX

Adopt Section 93102, Subchapter 7.5, Chapter 1, Part III, Titles 17 and 26, California Administrative Code, to read as follows:

93102. Hexavalent Chromium Airborne Toxic Control Measure - Decorative and Hard Chrome Plating and Chromic Acid Anodizing Facilities.

(a) Definitions. For the purposes of this section, the following definitions shall apply:

(1) "Ampere-hours" means the integral of electrical current applied to a plating tank (amperes) over a period of time (hours).

(2) "Anti-mist additive" means a chemical which reduces the emission rate from the tank when added to and maintained in the plating tank.

(3) "Chrome" means metallic chrome.

(4) "Chrome plating" means either hard or decorative chrome plating.

(5) "Chromic acid" means an aqueous solution of chromium trioxide (CrO_3), or a commercial solution containing chromic acid, dichromic acid (H_2CrO_7), or trichromic acid ($H_2Cr_3O_{10}$).

(6) "Chromic acid anodizing" means the electrolytic process by which a metal surface is converted to an oxide surface coating in a solution containing chromic acid.

(7) "Chromium" means hexavalent chromium.

(8) "Control equipment" means any device which reduces emissions from the emissions collection system.

(9) "Decorative chrome plating" means the process by which chromium is electrodeposited from a solution containing compounds of chromium onto an object resulting in a chrome layer 1 micron (0.04 mil.) thick or less.

(10) "Emission factor" means the mass of chromium emitted during a test conducted in the emissions collection system in accordance with ARB Test Method 425, divided by the ampere-hours consumed by the tanks in the tested emissions collection system, expressed as the mass of chromium emitted per ampere-hour of electrical current consumed.

(11) "Emissions collection system" means a device or apparatus used to gather chromium emissions from the surface of a chrome plating or chromic acid anodizing tank or tanks.

(12) "Facility" means a business or businesses engaged in chrome plating or chromic acid anodizing which are owned or operated by the same person or persons and are located on the same parcel or on contiguous parcels.

(13) "Facilitywide emissions from hard chrome plating or chromic acid anodizing" means the total emissions from all hard chrome plating or chromic acid anodizing at the facility over a calendar year. Emissions shall be calculated as the sum of emissions from the emissions collection system at the facility. The emissions from an emissions collection system shall be calculated by multiplying the emission factor for that emissions collection system by the sum of ampere-hours consumed during that year for all of the tanks served by the emissions collection system.

(14) "Hard chrome plating" means the process by which chromium is electrodeposited from a solution containing compounds of chromium onto an object resulting in a chrome layer thicker than 1 micron (0.04 mil).

(15) "Plating tank" means any container used to hold a chromium or chromic acid solution for the purposes of chrome plating or chromic acid anodizing.

(16) "Uncontrolled chromium emissions from the hard chrome plating or chromic acid anodizing facility" means the chromium emissions from the emissions collection systems at the facility calculated as if no control equipment is in use. For the purpose of determining compliance with this rule, the uncontrolled chromium emissions shall be calculated using an emission factor based on tests conducted in accordance with ARB Test Method 425 or 14 mg/ampere-hour, whichever is less.

(b) Requirements for Decorative Chrome Plating Facilities

(1) No person shall operate a decorative chrome plating tank unless an anti-mist additive is continuously maintained in the plating tank, or control equipment is installed and used, in a manner which has been demonstrated to and approved by the district air pollution control officer as reducing chromium emissions by 95 percent or more relative to chromium emissions when an anti-mist additive is not maintained, or control equipment is not installed and used.

(c) Requirements for Hard Chrome Plating and Chromic Acid Anodizing Facilities

(1) The owners or operators of all hard chrome plating and chromic acid anodizing facilities shall maintain a continuous record of current integrated over time (ampere-hours) for all plating tanks for each collection system used in the hard chrome plating or chromic acid anodizing operations and shall,

within six months after district adoption of regulations enacting this control measure, and upon request thereafter, submit the information to the district air pollution control officer.

(2) No person shall operate a plating tank for hard chrome plating or chromic acid anodizing unless the tank has an emissions collection system.

(3) No person shall operate a hard chrome plating or chromic acid anodizing tank unless:

(A) the chromium emissions from the emissions collection system serving the plating tank have been reduced by 95 percent or more of the uncontrolled chromium emissions or

(B) the chromium emissions from the emissions collection system serving the plating tank have been reduced to less than 0.15 milligrams (mg) of chromium per ampere-hour of electrical charge applied to the plating tank.

(4) No person shall operate a hard chrome plating tank or chromic acid anodizing tank at a facility if facilitywide chromium emissions from hard chrome plating or chromic acid anodizing are greater than 2 pounds per year, but less than 10 pounds per year, unless:

(A) the chromium emissions from the emissions collection systems serving the plating tanks have been reduced by at least 99 percent of the uncontrolled chromium emissions from the hard chrome plating or chromic acid anodizing facility or

(B) the chromium emissions from the emissions collection systems are reduced to less than 0.03 mg of chromium per ampere-hour of electrical charge applied to the tanks.

(5) No person shall operate a hard chrome plating or chromic acid anodizing tank at a facility if facilitywide chromium emissions from hard chrome plating or chromic acid anodizing are 10 pounds per year or greater, unless:

(A) the chromium emissions from the emissions collection systems serving the plating tanks have been reduced by at least 99.8 percent of the uncontrolled chromium emissions from the hard chrome plating or chromic acid anodizing facility or

(B) the chromium emissions from the emissions collection systems are reduced to less than 0.006 mg of chromium per ampere-hour electrical charge applied to the tanks.

(d) Compliance Schedule - Decorative Chrome Plating Facilities

(1) No later than six months after district adoption of regulations enacting this control measure, the owners or operators of decorative chrome plating tanks must comply with the provisions of (b)(1).

(e) Compliance Schedule - Hard Chrome Plating and Chromic Acid Anodizing Facilities

(1) No later than twelve months after district adoption of regulations enacting this control measure, the owner or operator of a hard chrome plating or chromic acid anodizing facility subject to sections (c)(3) or (c)(5) shall submit to the district air pollution control officer an application for an Authority to Construct the equipment necessary to meet the requirements of (c)(2) and (c)(3) and no later than eighteen months after district adoption of

regulations enacting this control measure, the facility shall be in compliance with the requirements of (c)(2) and (c)(3).

(2) No later than eighteen months after district adoption of regulations enacting this control measure, the owner or operator of a hard chrome plating or chromic acid anodizing facility subject to (c)(4) shall submit to the district air pollution control officer an application for an Authority to Construct the equipment necessary to meet the requirements of (c)(2) and (c)(4) and no later than twenty four months after district adoption of regulations enacting this control measure the facility shall be in compliance with the requirements of (c)(2) and (c)(4).

(3) No later than thirty months after district adoption of regulations enacting this control measure, the owner or operator of a hard chrome plating or chromic acid anodizing facility subject to (c)(5) shall submit to the district air pollution control officer an application for an Authority to Construct the equipment necessary to meet the requirements of (c)(5) and no later than forty eight months after district adoption of regulations enacting this control measure the facility shall be in compliance with the requirements of (c)(5).

NOTE: Authority cited: Sections 39600, 39601, 39650 and 39666, Health and Safety Code. Reference: Sections 39650 and 39666, Health and Safety Code.

BAAQMD Adopted Rule 11-8

REGULATION 11
HAZARDOUS POLLUTANTS
RULE 8
HEXAVALENT CHROMIUM

11-8-100 GENERAL

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REGULATION 11
HAZARDOUS POLLUTANTS
RULE 8
HEXAVALENT CHROMIUM

(Adopted July 20, 1988)

11-8-100 GENERAL

11-8-101 **Description:** The purpose of this Rule is to control emissions of hexavalent chromium to the atmosphere from the following sources: hard chrome plating, decorative chrome plating, and chromic acid anodizing.

11-8-102 **Exemption, Trivalent Chromium:** The provisions of this Rule do not apply to operations which do not use hexavalent chromium.

11-8-200 DEFINITIONS

11-8-201 **Chrome Plating:** The process by which chromium is electrodeposited from a solution containing compounds of chromium onto a substrate in order to provide either a decorative surface or a corrosion- and wear-resistant surface.

11-8-202 **Chromic Acid Anodizing:** The electrolytic process by which a metal surface is converted to an oxide in a solution containing chromic acid.

11-8-203 **Decorative Chrome Plating:** A chrome plating process resulting in the deposition of a chrome layer 1 micron (0.04 mil) thick or less.

11-8-204 **Emission:** A gas or liquid stream containing one or more air contaminants. The verb form, emit, means the act of discharging an emission into the atmosphere. Includes fugitive emissions and secondary emissions from wastewater treatment.

11-8-205 **Emissions Collection System:** A device or apparatus used to gather hexavalent chromium emissions from the surface of a chrome plating or anodizing tank. An emissions collection system typically consists of hoods, ducting, and fan, and may collect emissions from one or more plating tanks.

11-8-206 **Hard Chrome Plating:** A chrome plating process resulting in the deposition of a chrome layer greater than 1 micron (0.04 mil) thick.

11-8-207 **Mist Suppressant:** A chemical additive which reduces the emission rate of hexavalent chromium from a plating bath. A mist suppressant may operate by reducing the surface tension of the plating bath, by creating a layer of dense foam over the entire surface of the bath, or by a combination of these effects.

11-8-300 STANDARDS

11-8-301 **Decorative Chrome Plating:** A person shall not operate a decorative chrome plating tank unless one of the following control techniques is applied:

301.1 A mist suppressant is continuously maintained in the tank in a manner which has been demonstrated to the satisfaction of the APCO to reduce emissions of hexavalent chromium by 95 percent or more relative to emissions when a mist suppressant is not used.

301.2 A layer of plastic balls is continuously maintained in the tank in a manner which has been demonstrated to the satisfaction of the APCO to reduce emissions of hexavalent chromium by 95 percent or more relative to emissions when plastic balls are not used.

301.3 An equivalent method approved by the APCO is applied.

11-8-310 **Hard Chrome Plating and Chromic Acid Anodizing:** A person shall not operate a hard chrome plating tank or chromic acid anodizing tank unless the emissions of hexavalent chromium from the emissions collection system serving the tank have been reduced to less than the following levels:

310.1 Emissions of hexavalent chromium from hard chrome plating and chromic acid anodizing shall not exceed 0.15 milligrams (mg) of hexavalent chromium per ampere-hour of electrical current applied to the tank(s) served by the emissions collection system.

310.2 If total facility-wide emissions of hexavalent chromium from hard chrome plating and chromic acid anodizing are more than 2 pounds per year, but less than 10 pounds per year, the limit is 0.03 milligrams (mg) of hexavalent chromium per ampere-hour of electrical current applied to the tank(s) served by the emissions collection system.

310.3 If total facility-wide emissions of hexavalent chromium from hard chrome plating and chromic acid anodizing are more than 10 pounds per year, the limit is 0.006 milligrams (mg) of hexavalent chromium per ampere-hour of electrical current applied to the tank(s) served by the emissions collection system.

11-8-330 **Minimum Acceptable Stack Design:** A person shall not operate a source subject to Section 11-8-310 unless all exhausted emissions are emitted through a stack no less than 10 meters above grade at a velocity of no less than 10 meters/second.

11-8-400 ADMINISTRATIVE REQUIREMENTS

11-8-401 **Compliance Schedule:** Any person subject to this Rule shall comply with the following increments of progress:

401.1 January 1, 1989: Any person subject to Section 11-8-301 shall submit to the APCO a description of the method used to achieve compliance. The description shall identify, operating parameters such as chemical concentrations, bath temperatures, or any other parameter identified by the APCO, which must be maintained in order to comply with this Rule.

401.2 January 1, 1989: Any person subject to Section 11-8-310 shall submit to the APCO an application for an authority to construct equipment to meet the requirements of Section 11-8-310.1, or demonstrate through an approved source test that the source is already in compliance.

401.3 July 1, 1991: Any person subject to Sections 11-8-310.2 or 11-8-310.3 shall submit to the APCO an application for an authority to construct equipment to meet the requirements of Sections 11-8-310.2 and 11-8-310.3.

401.4 July 1, 1990: Any person subject to Section 11-8-310.2 or 11-8-310.3 shall submit to the APCO a report describing control techniques, including modifications of operating practices, processes or equipment, that that person considered. The report shall include the reasons for non-utilization of any control technique considered. All control techniques identified by the APCO prior to January 1, 1990, shall be considered.

11-8-402 **Effective Dates:**

402.1 Section 11-8-301 is effective January 1, 1989.

402.2 Section 11-8-310.1 is effective January 1, 1990.

402.3 Sections 11-8-310.2 and 310.3 are effective July 1, 1992.

11-8-403 **Demonstration of Compliance:** Compliance with Section 11-8-310 shall be determined by the following procedure. The actual emission factor (expressed in mg/amp-hour) for the equipment in question shall be measured per Section 11-8-602. Allowable annual electricity usage, in amp-hours, shall be calculated based on the

measured factor. The operating permit shall be conditioned to reflect the allowable electricity usage and operating conditions.

11-8-404 **Initial Demonstration of Compliance:** Any person subject to Section 11-8-310 shall, within 60 days of the effective date of the appropriate Section, or within 60 days of startup of the plating operation, whichever is later, perform a source test to determine the hexavalent chromium emission factor and submit the results to the APCO.

11-8-500 MONITORING AND RECORDS

11-8-501 **Usage Records:** Any person subject to this Rule shall keep monthly records of current applied to the plating baths integrated over time, in units of amp-hours.

11-8-502 **Operating Parameter Records:** Any person subject to Section 11-8-401.1 shall maintain records of chemical concentrations, bath temperatures, or any other measurements recommended by manufacturer's specification or the APCO.

11-8-503 **Reporting:** Any person subject to this Rule shall submit records of current consumption to the APCO on an annual basis, and shall maintain such records for at least one year following submittal. Sufficient information shall be provided to allow separate determination of compliance for each emissions collection system.

11-8-600 MANUAL OF PROCEDURES

11-8-601 **Determination of Emissions:** Emissions of hexavalent chromium shall be determined by multiplying the measured amp-hours of usage by the emission factor measured pursuant to Section 11-8-602.

11-8-602 **Determination of Emission Factor:** The hexavalent chromium emission factor (mg/amp-hr) shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-35.

SCAQMD Adopted Rule 1169

(Adopted June 3, 1988)

RULE 1169. HEXAVALENT CHROMIUM - CHROME PLATING AND CHROMIC ACID ANODIZING

(a) Definitions

For the purpose of this rule the following definitions shall apply:

(1) Ampere-Hours is the integral of electrical current applied to a plating tank (amperes) over a period of time (hours).

(2) Anti-Mist Additive is a chemical which reduces the emission rate from the tank when added to and maintained in the plating tank.

(3) Chrome means metallic chrome.

(4) Chrome Plating means either hard or decorative chrome plating.

(5) Chromic Acid is an aqueous solution of chromium trioxide (CrO_3) or a commercial solution containing chromic acid, dichromic acid (H_2CrO_7), or trichromic acid ($H_2Cr_3O_{10}$).

(6) Chromic Acid Anodizing is the electrolytic process by which a metal surface is converted to an oxide surface coating in a solution containing chromic acid.

(7) Chromium means a hexavalent chromium.

(8) Control Equipment is any device which reduces emissions from the emissions collection system.

(9) Decorative Chrome Plating is the process by which chromium is electrodeposited from a solution containing compounds of chromium onto an object resulting in a chrome layer 1 micron (0.04 mil) thick or less.

(10) Emission Factor is the mass of chromium emitted during a test conducted in the emissions collection system in accordance with ARB Test Method 425, or other equivalent test method approved by the Executive Officer, divided by the ampere-hours consumed by the tanks in the tested emissions collection system, expressed as the mass of chromium emitted per ampere-hour of electrical current consumed.

(11) Emissions Collection System is any device or apparatus designed and operated for the collection of fugitive chromium emissions from all

chrome plating and/or chromic acid anodizing tanks as approved by the Executive Officer.

(12) Facility means a business or businesses engaged in chrome plating or chromic acid anodizing which are owned or operated by the same person or persons and are located on the same or contiguous parcels.

(13) Facilitywide Emissions from Hard Chrome Plating or Chromic Acid Anodizing is the total emissions from all hard chrome plating or chromic acid anodizing at the facility over a calendar year. Emissions shall be calculated as the sum of emissions from the emissions collection system at the facility. The emissions from an emissions collection system shall be calculated by multiplying the emission factor for that emissions collection system by the sum of ampere-hours consumed during that year for all of the tanks served by the emissions collection system.

(14) Hard Chrome Plating is the process by which chromium is electrodeposited from a solution containing compounds of chromium onto an object resulting in a chrome layer thicker than 1 micron (0.04 mil).

(15) Plating Tank means any container used to hold a chromium or chromic acid solution in which chrome plating or chromic acid anodizing occurs.

(16) Uncontrolled Chromium Emissions from the Chrome Plating or Chromic Acid Anodizing Facility is the chromium emissions from the emissions collection systems at the facility calculated as if no control measure is in use. For the purpose of determining compliance with this rule, the uncontrolled chromium emissions shall be calculated using an emission factor based on tests conducted in accordance with ARB Test Method 425 or other equivalent test methods approved by the Executive Officer, or 14.0 milligram (mg) of chromium per ampere-hour, whichever is less.

(b) Requirements For Decorative Chrome Plating Facilities

A person shall not operate a decorative chrome plating tank unless one of the following control measures is used to demonstrate chromium emissions reduction by ninety-five percent (95%) or more from uncontrolled chromium emissions which is approved by the Executive Officer:

(1) An anti-mist additive is continuously-maintained; or

(2) Control equipment is installed and used.

(c) Requirements For Hard Chrome Plating and/or Chromic Acid Anodizing Facilities

(1) A person shall not operate a hard chrome plating or a chromic acid anodizing tank unless the tank has an emissions collection system and one of the following conditions are met:

(A) The chromium emissions from the emissions collection system serving the plating tank must be reduced by 95 percent or more from uncontrolled chromium emissions; or

(B) The chromium emissions from the emissions collection system serving the plating tank must be reduced to less than 0.15 milligram (mg) of chromium per ampere-hour of electrical charge applied to the plating tank.

(2) A person shall not operate a hard chrome plating tank or a chromic acid anodizing tank at a facility where the facilitywide chromium emissions from hard chrome plating or chromic acid anodizing are greater than 2 pounds per year, unless one of the following conditions are met:

(A) The chromium emissions from the emissions collection system serving the plating tank must be reduced by 99 percent or more from uncontrolled chromium emissions; or

(B) The chromium emissions from the emissions collection system serving the plating tank must be reduced to less than 0.03 milligram (mg) of chromium per ampere-hour of electrical charge applied to the plating tank.

(3) A person shall not operate a hard chrome plating tank or a chromic acid anodizing tank at a facility where the facilitywide chromium emissions from hard chrome plating or chromic acid anodizing are ten (10) pounds per year or greater, unless one of the following conditions are met:

(A) The chromium emissions from the emissions collection system serving the plating tank must be reduced by 99.8 percent or more from uncontrolled chromium emissions; or

(B) The chromium emissions from the emissions collection system serving the plating tank must be reduced to less than 0.006

milligram (mg) of chromium per ampere-hour of electrical charge applied to the plating tank.

(d) Recordkeeping

A person shall not operate a decorative chrome plating tank, a hard chrome plating tank or a chromic acid anodizing tank unless the following applicable conditions are met:

(1) On and after the date of final compliance, a continuous record shall be maintained of anti-mist additive concentrations or any other measurements recommended by manufacturer's specification and the Executive Officer;

(2) On and after the date of adoption, a continuous record of current integrated over time (ampere-hours) shall be maintained for all plating tanks for each collection system used in the chrome plating and/or chromic acid anodizing operations.

(3) Copies of all records including all pertinent information in relation to the operation shall be kept for not less than two years and shall be made available to the Executive Officer upon request.

(e) Compliance Schedule

(1) For decorative chrome plating facilities:

(A) On or before November 1, 1988, the owner or operator of decorative chrome plating tanks shall comply with the provisions of subparagraph (b).

(2) For hard chrome plating and/or chromic acid anodizing facilities:

(A) The owner or operator of any hard chrome plating or chromic acid anodizing facility shall meet the following compliance schedule:

(i) On or before May 1, 1989, submit to the Executive Officer an application for a permit to construct the equipment necessary to meet the requirements of subparagraph (c)(1); and

(ii) On or before November 1, 1989, be in full compliance with the requirements of subparagraph (c)(1).

(B) The owner or operator of any hard chrome plating or chromic acid anodizing facility subject to subparagraph (c)(2) shall in addition meet the following compliance schedule:

(i) On or before November 1, 1989, submit to the Executive Officer an application for a permit to construct, if needed, the equipment necessary to meet the requirements of subparagraph (c)(2); and

(ii) On or before May 1, 1990, be in full compliance with the requirements of subparagraph (c)(2).

(C) The owner or operator of any hard chrome plating or chromic acid anodizing facility having any equipment subject to subparagraph (c)(3) shall, in addition, meet the following compliance schedule:

(i) On or before November 1, 1990, submit to the Executive Officer an application for a permit to construct, if needed, the equipment necessary to meet the requirements of subparagraph (c)(3); and

(ii) On or before May 1, 1992, be in full compliance with the requirements of subparagraph (c)(3).