

**RULE 1469. HEXAVALENT CHROMIUM EMISSIONS FROM CHROMIUM
ELECTROPLATING AND CHROMIC ACID ANODIZING
OPERATIONS**

(a) Applicability

- (1) This rule shall apply to the owner or operator of any facility each chromium electroplating or chromic acid anodizing tank at facilities performing hard chromium electroplating, decorative chromium electroplating, or chromic acid anodizing. Compliance with this rule shall be in addition to other applicable rules, such as Rule 1401 – New Source Review of Toxic Air Contaminants and Rule 1401.1 – Requirements for New and Relocated Facilities Near Schools.
- (2) Any person who sells, supplies, offers for sale, uses, or manufactures for sale in the District a chromium electroplating or chromic acid anodizing kit.

(b) Definitions

For the purposes of this rule, the following definitions shall apply:

- (1) ADD-ON AIR POLLUTION CONTROL DEVICEEQUIPMENT means equipment installed in the ventilation system of chromium electroplating and anodizing tanks for the purposes of collecting and containing chromium emissions from the tank(s).
- (2) AIR POLLUTION CONTROL TECHNIQUE means any method, such as an add-on air pollution control deviceequipment, mechanical fume suppressant or a chemical fume suppressant, that is used to reduce chromium emissions from chromium electroplating and chromic acid anodizing tanks.
- (3) AMPERE-HOURS means the integral of electrical current applied to an electroplating tank (amperes) over a period of time (hours).
- (4) ANNUAL PERMITTED AMPERE-HOURS means the maximum allowable chromium electroplating or anodizing rectifier production in ampere-hours, on an annual basis as specified in the Permit to Operate, Permit to Construct, or Compliance Plan for the facility.
- (54) AREA SOURCE means any stationary source of hazardous air pollutants that is not a major source as defined in this rule.

- (65) BASE ~~METAL~~MATERIAL means the metal, ~~or~~ metal alloy, or plastic that comprises the workpiece.
- (76) BATH COMPONENT means the trade or brand name of each component~~(s)~~ in trivalent chromium electroplating baths, including the chemical name of the wetting agent contained in that component.
- (87) BREAKDOWN means an unforeseeable impairment of an air pollution control device~~equipment~~ or related operating equipment which causes a violation of any emission limitation or restriction prescribed by this rule or by State law and which: is not the result of neglect or disregard of any air pollution control law, rule, or regulation; is not intentional or the result of negligence, or improper maintenance; is not a recurrent breakdown of the same equipment; and, does not constitute a nuisance as defined in the State of California Health and Safety Code, Section 41700, with the burden of proving the criteria of this section placed upon the person seeking to come under the provisions of this law.
- (98) CHEMICAL FUME SUPPRESSANT means any chemical agent that reduces or suppresses fumes or mists at the surface of an electroplating or anodizing bath; another term for fume suppressant is mist suppressant.
- (109) CHROMIC ACID means the common name for chromium anhydride (CrO₃).
- (110) CHROMIC ACID ANODIZING means the electrolytic process by which an oxide layer is produced on the surface of a base ~~metal~~-material for functional purposes (e.g., corrosion resistance or electrical insulation) using a chromic acid solution. In chromic acid anodizing, the part to be anodized acts as the anode in the electrical circuit, and the chromic acid solution, with a concentration typically ranging from 50 to 100 grams per liter (g/L), serves as the electrolyte.
- (124) CHROMIUM ELECTROPLATING OR CHROMIC ACID ANODIZING TANK means the receptacle or container in which hard or decorative chromium electroplating or chromic acid anodizing occurs.
- (132) COMPOSITE MESH-PAD SYSTEM means an add-on air pollution control device~~equipment~~ typically consisting of several mesh-pad stages. The purpose of the first stage is to remove large particles. Smaller particles are removed in the second stage, which consists of the composite mesh pad. A final stage may remove any re-entrained particles not collected by the composite mesh pad.

- (143) DECORATIVE CHROMIUM ELECTROPLATING means the process by which a thin layer of chromium (typically 0.003 to 2.5 microns) is electrodeposited on a base metal, plastic, or undercoating to provide a bright surface with wear and tarnish resistance. In this process, the part(s) serves as the cathode in the electrolytic cell and the solution serves as the electrolyte. Typical current density applied during this process ranges from 540 to 2,400 Amperes per square meter (A/m²) for total [electroplating](#) times ranging between 0.5 to 5 minutes.
- (15) [DRAGOUT means fluid containing hexavalent chromium that drips off from parts being electroplated or anodized, or from equipment used to remove electroplated or anodized parts from a tank.](#)
- (164) ELECTROPLATING OR ANODIZING BATH means the electrolytic solution used as the conducting medium in which the flow of current is accompanied by movement of metal ions for the purpose of electroplating metal out of the solution onto a workpiece or for oxidizing the base material.
- (175) EMISSION LIMITATION means, for the purposes of this rule, the concentration of total chromium allowed to be emitted expressed in milligrams per dry standard cubic meter (mg/dscm), or the allowable surface tension expressed in dynes per centimeter (dynes/cm) for decorative chromium electroplating and chromic acid anodizing tanks; and the milligrams of hexavalent chromium per ampere-hour (mg/amp-hr) of electrical current applied to the electroplating tank for hard or decorative chromium electroplating tanks or chromic acid anodizing tanks, or mass emission rate.
- (186) ENCLOSED STORAGE AREA is any space or structure used to contain material that prevents its contents from being emitted into the atmosphere.
- (19) [EXISTING FACILITY means a facility that is in operation before October 24, 2007.](#)
- (4720) FACILITY means the major or area source at which chromium electroplating or chromic acid anodizing is performed and/or any source or group of sources or other air contaminant-emitting activities which are located on one or more contiguous properties within the District, in actual physical contact or separated solely by a public roadway or other public right-of-way, and are owned or operated by the same person (or by persons under common control), or an outer continental shelf (OCS) source as

determined in 40 CFR Section 55.2. Such above-described groups, if noncontiguous, but connected only by land carrying a pipeline, shall not be considered one facility. Sources or installations involved in crude oil and gas production in Southern California Coastal or OCS Waters and transport of such crude oil and gas in Southern California Coastal or OCS Waters shall be included in the same facility which is under the same ownership or use entitlement as the crude oil and gas production facility on-shore.

- (1821) FIBER-BED MIST ELIMINATOR means an add-on air pollution control ~~device~~equipment that removes contaminants from a gas stream through the mechanisms of inertial impaction and Brownian diffusion. This ~~device~~equipment is typically installed downstream of another control device, which serves to prevent plugging, and consists of one or more fiber beds. Each bed consists of a hollow cylinder formed from two concentric screens; the fiber between the screens may be fabricated from glass, ceramic, plastic, or metal.
- (1922) FOAM BLANKET means the type of chemical fume suppressant that generates a layer of foam across the surface of a solution when current is applied to that solution.
- (2023) FRESH WATER means water, such as tap water, that has not been previously used in a process operation or, if the water has been recycled from a process operation, it has been treated and meets the effluent guidelines for chromium wastewater.
- (2124) FUGITIVE DUST, for the purpose of this rule means any solid particulate matter containing hexavalent chromium that becomes airborne by natural or man-made activities, excluding particulate matter emitted from an exhaust stack.
- (2225) HARD CHROMIUM ELECTROPLATING or INDUSTRIAL CHROMIUM ELECTROPLATING means a process by which a thick layer of chromium (typically greater than 1.0 microns) is electrodeposited on a base material to provide a surface with functional properties such as wear resistance, a low coefficient of friction, hardness, and corrosion resistance. In this process, the part serves as the cathode in the electrolytic cell and the solution serves as the electrolyte. Hard chromium electroplating process is performed at current densities typically ranging from 1,600 to 6,500 A/m² for total ~~electroplating~~ times ranging from 20 minutes to 36 hours depending upon the desired plate thickness.

- (2326) HEXAVALENT CHROMIUM means the form of chromium in a valence state of +6.
- (2427) HIGH EFFICIENCY PARTICULATE ARRESTORS (HEPA) means filter(s) rated at 99.97 percent or more efficient in collecting particle sizes 0.3 microns or larger.
- (25) ~~LARGE, HARD CHROMIUM ELECTROPLATING FACILITY means a facility that performs hard chromium electroplating and emits greater than or equal to 10 pounds per year (lbs/yr) controlled emissions of hexavalent chromium.~~
- (286) LEAK means the release of chromium emissions from any opening in the emission collection system prior to exiting the emission control device.
- (297) MAJOR SOURCE means any stationary source or group of stationary sources located within a contiguous area and under common control that emits, or has the potential to emit, considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.
- (3028) MAXIMUM CUMULATIVE POTENTIAL RECTIFIER CAPACITY means the summation of the total installed rectifier capacity associated with the hard chromium electroplating tanks at a facility, expressed in amperes, multiplied by the maximum potential operating schedule of 8,400 hours per year and 0.7, which assumes that electrodes are energized 70 percent of the total operating time. The maximum potential operating schedule is based on operating 24 hours per day, 7 days per week, 50 weeks per year.
- (3129) MECHANICAL FUME SUPPRESSANT means any device that reduces fumes or mist at the surfaces of an electroplating or anodizing bath by direct contact with the surface of the bath. Polyballs are the most commonly used mechanical fume suppressant.
- (30) ~~MEDIUM, HARD CHROMIUM ELECTROPLATING FACILITY means a facility that performs hard chromium electroplating and emits greater than 2 pounds per year (lbs/yr) but less than 10 pounds per year (lbs/yr) controlled emissions of hexavalent chromium.~~
- (324) MODIFICATION means either:
- (A) any physical change in, change in method of operation of, or addition to an existing permit unit subject to this rule that requires an application for a permit to construct and/or operate and results in

an increase in hexavalent chromium emissions. Routine maintenance and/or repair shall not be considered a physical change. A change in the method of operation of equipment, unless previously limited by an enforceable permit condition, shall not include:

- (i) an increase in the production rate or annual ampere-hours, unless such increases will cause the maximum design capacity of the equipment to be exceeded, or will cause a facility to be subject to a different requirement in Table 2 of paragraph (c)(11); or
- (ii) an increase in the hours of operation; or
- (iii) a change in ownership of a source; ~~or~~
- (B) the addition of any new chromium electroplating or anodizing tank permit unit at an existing source facility which increases hexavalent chromium emissions; or
- (C) the fixed capital cost of the replacement of components exceeding 50 percent of the fixed capital cost that would be required to construct a comparable new source.

(33) MODIFIED FACILITY means any facility which has undergone a modification on or after October 24, 2007.

(34) NEW FACILITY means any facility that begins initial operations on or after October 24, 2007. "New Facility" does not include the installation of a new chromium electroplating or anodizing tank at an existing facility or the modification of an existing facility.

(352) OPERATING PARAMETER VALUE means a minimum or maximum value established for a control device or process parameter which, if achieved by itself or in combination with one or more other operating parameter values, determines that an owner or operator is in continual compliance with the applicable emission limitation or standard.

(363) PACKED-BED SCRUBBER means an add-on air pollution control device equipment consisting of a single or double packed-bed that contains packing media on which the chromic acid droplets impinge. The packed-bed section of the scrubber is followed by a mist eliminator to remove any water entrained from the packed-bed section.

- (374) RESPONSIBLE OFFICIAL means one of the following:
- (A) For a corporation: A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities and either:
 - (i) The facilities employ more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars); or
 - (ii) The delegation of authority to such representative is approved in advance by the U. S. EPA Administrator.
 - (B) For a partnership or sole proprietorship: a general partner or the proprietor, respectively.
 - (C) For a municipality, state, Federal, or other public agency: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of the U.S. Environmental Protection Agency [U.S. EPA]).
 - (D) For sources (as defined in this rule) applying for or subject to a Title V permit: “responsible official” shall have the same meaning as defined in District’s Regulation XXX.
- (38) SCHOOL means any public or private school, including juvenile detention facilities with classrooms, used for purposes of the education of more than 12 children at the school, including in kindergarten and grades 1 through 12, inclusive, but does not include any private school in which education is primarily conducted in private homes. The term includes any building or structure, playground, athletic field, or other area of school property, but does not include unimproved school property.
- (39) SCHOOL UNDER CONSTRUCTION means any property that meets any of the following conditions.
- (A) construction of a school has commenced; or

- (B) a CEQA Notice for the construction of a school has been issued; or
(C) a school has been identified in an approved local government specific plan.
- (35) ~~SMALL, HARD CHROMIUM ELECTROPLATING FACILITY~~ means a facility that performs hard chromium electroplating and emits less than or equal to 2 pounds per year (lbs/yr) controlled emissions.
- (3640) ~~SENSITIVE RECEPTOR~~ ~~includes schools (kindergarten through grade 12), licensed daycare centers, hospitals, and convalescent homes~~ means any residence including private homes, condominiums, apartments, and living quarters; education resources such as preschools and kindergarten through grade twelve (k-12) schools; daycare centers; and health care facilities such as hospitals or retirement and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing.
- (3741) SOURCE means any chromium electroplating or chromic acid anodizing operation and any equipment or materials associated with the selected associated air pollution control technique.
- (3842) STALAGMOMETER means a device used to measure the surface tension of a solution by determining the number of drops, or the weight of each drop, in a given volume of liquid.
- (43) SUBSTANTIAL USE of a permit to construct means one or more of the following:
- (A) the equipment that constitutes the source has been purchased or acquired;
(B) construction activities, other than grading or installation of utilities or foundations, have begun and are continuing; or
(C) a contract to complete construction of the source within one year has been entered into.
- (3944) SURFACE TENSION means the property, due to molecular forces, that exists in the surface film of all liquids and tends to prevent liquid from spreading.
- (4045) TANK OPERATION means the time in which current and/or voltage is being applied to a chromium electroplating tank or a chromic acid anodizing tank.

- (4146) TENSIO METER means a device used to measure the surface tension of a solution by measuring the force necessary to pull a filament or ring from the surface of a liquid.
- (4247) TRIVALENT CHROMIUM means the form of chromium in a valence state of +3.
- (4348) TRIVALENT CHROMIUM PROCESS means the process used for electrodeposition of a thin layer of chromium onto a base material using a trivalent chromium solution instead of a chromic acid solution.
- (4449) WEEKLY means at least once every seven calendar days.
- (4550) WETTING AGENT means the type of chemical fume suppressant that reduces the surface tension of a liquid.

(c) Requirements

- (1) ~~The owner or operator of any source shall meet the requirements of the Airborne Toxic Control Measure (ATCM) for Emissions of Hexavalent Chromium from Chrome Plating and Chromic Acid Anodizing Operations, and the National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks until this rule is fully implemented.~~
- (21) The owner or operator of a ~~hexavalent chrome 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 that operates on the electrical power lines connected to the tank or group of tanks. A separate meter shall be hard wired for each rectifier.
- (32) ~~On or before May 2, 2004,~~ The owner or operator of a source with any electroplating or anodizing tank using a wetting agent chemical fume suppressant shall use only wetting agent chemical fume suppressants certified pursuant to subdivision (f).
- (43) No hexavalent chromium electroplating or chromic acid anodizing tank shall be air sparged when electroplating is not occurring, or while chromic acid is being added.
- (54) Housekeeping ~~Practices~~ Requirements:
~~On and after July 1, 2003, housekeeping practices shall be implemented to reduce emissions of hexavalent chromium caused by the storage, handling and transport of chromic acid and sludge containing hexavalent chromium~~

~~at a facility. At a minimum, the following practices shall be implemented.~~
An owner or operator of a hexavalent chromium electroplating or chromic acid anodizing facility shall:

- (A) Store ~~C~~chromic acid powder or flakes, or other substances that may contain hexavalent chromium, shall be stored in a closed container in an enclosed storage area when not in use;
- (B) Use a closed container when transporting ~~C~~chromic acid powder or flakes shall be transported from an enclosed storage area to electroplating or anodizing tanks ~~in a closed container~~;
- (C) Sludge ~~Clean up or contain any liquid or solid material that may~~ contains hexavalent chromium that is spilled shall be cleaned up or contained immediately and no longer than ~~within~~ one hour after being spilled, ~~to minimize trackout~~;
- (D) Clean ~~S~~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 or surfaces that potentially ~~that~~ accumulate dust shall be washed down, at least once every seven days in one or more of the following manners: HEPA vacuumed, hand wiped with a damp cloth, ~~or~~ wet mopped, or shall be maintained with the use of non-toxic chemical dust suppressants; and
- (E) Store, dispose of, recover, or recycle ~~C~~chromium or chromium-containing wastes generated from housekeeping activities shall be stored, disposed of, recovered, or recycled using practices that do not lead to fugitive dust.
- (F) Install a physical barrier to separate the buffing, grinding, or polishing area within a facility from the hexavalent chromium electroplating or anodizing operation. The barrier may take the form of plastic strip curtains.
- (G) Compressed air cleaning operations shall not be conducted at or adjacent to the buffing and grinding areas or the hexavalent chromium electroplating or anodizing operations.
- (H) Minimize dragout outside of the electroplating or anodizing tank(s) by implementing the following practices:
 - (i) Facilities with automated lines shall have drip trays installed between the electroplating or anodizing tanks so that the

liquid does not fall through the space between tanks. Trays shall be placed such that the liquid is captured and returned to the tank(s), and cleaned such that there is no accumulation of visible dust potentially contaminated with hexavalent chromium.

(ii) Facilities without automated lines shall 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 tanks, including associated process tanks. Facilities spraying down parts over the electroplating or anodizing tank(s) to remove excess chromic acid shall have a splash guard installed at the tank to minimize overspray and to ensure that any hexavalent chromium laden liquid is captured and returned to the electroplating or anodizing tank. Splash guards shall be cleaned such that there is no accumulation of visible dust potentially contaminated with hexavalent chromium.

(65) Add-on air pollution control ~~device(s)equipment~~ for hard or decorative chromiume electroplating or chromic acid anodizing tanks ~~required or installed prior to May 2, 2003~~ shall not be removed or rendered inoperable unless it is replaced by air pollution control techniques meeting a higher control efficiency than previously achieved, or an emission rate of 0.0015 milligrams per ampere-hour or less, whichever control efficiency is more effective, as demonstrated by a performance test conducted pursuant to subdivision (e), or unless the facility is operating under an approved alternative compliance method pursuant to paragraph (d)(6).

(76) Add-On Control Requirement for Hard Chromiume Electroplating Tanks
During tank operation, each owner or operator of an existing, modified or new source, except facilities that have applied for and received approval for an alternative compliance method pursuant to paragraph (d)(6) or an existing small operations that hasve applied for and received approval for an interim alternative requirement as specified in paragraph (d)(5), shall control hexavalent chromium emissions discharged to the atmosphere from that source by reducing the hexavalent chromium emissions using an add-on air pollution control ~~deviceequipment~~.

- (7) Training and Certification
- (A) 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.
- (B) Only persons who have completed a District-approved training program and have received a certification issued by the District shall be responsible for recordkeeping associated with environmental compliance, maintaining electroplating bath chemistries, and testing and recording electroplating bath surface tension data.
- (C) Notwithstanding subparagraph (c)(7)(B), in the event that all persons who have completed a District-approved training program leave employment at a facility, the owner or operator may be responsible for recordkeeping associated with environmental compliance, maintaining electroplating bath chemistries, and testing and recording electroplating bath surface tension data for a period not to exceed two years.
- (8) Interim Emission Standards for Existing Hexavalent Chromium Electroplating and Chromic Acid Anodizing Facilities Located 25 Meters or Less from a ~~Sensitive Receptor~~ Licensed Daycare, Hospital, Convalescent Home, or a Residence, or Located 100 Meters or Less from an Existing, as of May 2, 2003, School ~~(Kindergarten through Grade 12)~~. The following emission limitations shall be in effect until the limits of paragraph (c)(11) become effective.
- ~~The owner or operator shall:~~
- (A) ~~On or before May 1, 2005,~~ The owner or operator shall reduce hexavalent chromium emissions to an emission limitation of 0.0015 milligram or less per ampere-hour for each tank, as measured after add-on controls, if any; or

- (B) ~~€~~The owner or operator shall comply with any applicable interim alternative compliance option, as specified in subdivision paragraphs (d)(1) through (d)(5).
- (9) Interim Emission Standards for Existing Hexavalent Chromium Electroplating and Chromic Acid Anodizing Facilities Located More than 25 Meters from a ~~Sensitive Receptor~~Licensed Daycare, Hospital, Convalescent Home, or a Residence, and More than 100 Meters from an Existing, as of May 2, 2003, School.
The following emission limitations shall be in effect until the limits of paragraph (c)(11) become effective.
- (A) ~~On or before May 1, 2005, the owner or operator shall €~~The owner or operator shall reduce hexavalent chromium emissions to an emission limitation of:
- (i) 0.01 milligrams or less per ampere-hour for each tank, as measured after add-on controls, if any, when actual consumption of electrical current used by the facility for electroplating or anodizing tanks subject to this rule is less than the threshold given in Table 1, for the appropriate operating scenario and operating schedule, or the applicable distance-adjusted ampere-hour level as specified in Appendix 7; or
 - (ii) 0.0015 milligrams or less per ampere-hour for each tank, as measured after add-on controls, if any, when actual consumption of electrical current used by the facility for electroplating or anodizing tanks subject to this rule exceeds the threshold given in Table 1, for the appropriate facility operating scenario and regular operating schedule, or the applicable distance-adjusted ampere-hour level as specified in Appendix 7; or
- (B) The owner or operator shall ~~€~~comply with any applicable interim alternative compliance option, as specified in subdivision paragraphs (d)(1) through (d)(5).

Table 1
Ampere-Hour Thresholds for Facilities Located More than 25 Meters from a Sensitive Receptor or a Residence

Operating Scenario	Regular Operating Schedule	Ampere-Hour Threshold
Vented to Air Pollution Control Device/Equipment	More than 12 hours per day	1,800,000 ampere-hours/yr
Vented to Air Pollution Control Device/Equipment	12 hours per day or less	1,600,000 ampere-hours/yr
Not Vented to Air Pollution Control Device/Equipment	Any	1,150,000 ampere-hours/yr

(10) [Interim Emission Standards for Existing](#) Facilities Conducting Multiple [Hexavalent Chromium](#) [P](#)[Electroplating](#) Processes or Anodizing Processes

(A) For any facility subject to paragraph (c)(9) where a combination of hexavalent chromium electroplating or chromic acid anodizing is conducted, the owner or operator shall comply with an emission limitation in lieu of the one specified in paragraph (c)(9). The emission limitation shall be determined by calculating weighted facility energy consumption over any calendar year, using the following equation:

$$\text{Weighting Factor} = \frac{\text{Tanks Vented to APC Operating } > 12 \text{ hrs/day (Amp-hrs/yr)}}{(1)} + \frac{\text{Tanks Vented to APC Operating } \leq 12 \text{ hrs/day (Amp-hrs/yr)}}{(2)} + \frac{\text{Tanks Not Vented to APC (Amp-hrs/yr)}}{(3)}$$

Where:

- (1) = 1,800,000 ampere-hours per year or applicable distance-adjusted ampere-hour level as specified in Appendix 7.
- (2) = 1,600,000 ampere-hours per year or applicable distance-adjusted ampere-hour level as specified in Appendix 7.
- (3) = 1,150,000 ampere-hours per year or applicable distance-adjusted ampere-hour level as specified in Appendix 7.

(AB) If weighted source energy consumption is less than or equal to 1, the applicable emission limitation shall be 0.01 milligram or less per ampere-hour for each tank

(BC) If weighted source energy consumption is greater than 1, the applicable emission limitation shall be 0.0015 milligram or less per ampere-hour for each tank, as measured after add-on controls, if any.

(11) Emission Standards for Existing Hexavalent Hard and Decorative Chromium Electroplating and Chromic Acid Anodizing Facilities beginning October 24, 2007

(A) The owner or operator of an existing facility shall control hexavalent chromium emissions discharged to the atmosphere by meeting the requirements identified below in Table 2. Alternatively, a facility can choose to comply by operating under an approved alternative compliance method pursuant to paragraph (d)(6).

Table 2: Hexavalent Chromium Emission Limits for Existing Tanks

<u>Distance to Sensitive Receptor (meters)</u>	<u>Annual Permitted Ampere-hours</u>	<u>Emission Limit (mg/amp-hr)</u>	<u>Effective Date</u>
<u>< 100</u>	<u>< 20,000</u>	<u>0.01²</u>	<u>4/24/2008</u>
<u>< 100</u>	<u>> 20,000 and < 200,000</u>	<u>0.0015¹</u>	<u>10/24/2010</u>
<u>< 100</u>	<u>> 200,000</u>	<u>0.0015¹</u>	<u>10/24/2009</u>
<u>> 100</u>	<u>< 50,000</u>	<u>0.01²</u>	<u>4/24/2008</u>
<u>> 100</u>	<u>> 50,000 and < 500,000</u>	<u>0.0015</u>	<u>10/24/2011</u>
<u>> 100</u>	<u>> 500,000</u>	<u>0.0015¹</u>	<u>10/24/2009</u>

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 device(s) that controls emissions to below 0.0015 mg/amp-hr.

(B) The owner or operator of an existing facility shall submit by November 24, 2007, a notification to the District providing distance(s) to the nearest sensitive receptor. Distances shall be measured as follows:

(i) For facilities that do not have an add-on air pollution control device on October 24, 2007, the measurement shall be the distance, rounded to the nearest foot, from the edge of the hexavalent chromium electroplating or anodizing tank nearest the sensitive receptor to the property line of the nearest sensitive receptor that exists on October 24, 2007.

(ii) For facilities with an add-on air pollution control device on October 24, 2007, the measurement shall be the distance, rounded to the nearest foot, from the centroid of the stack to the property line of the nearest sensitive receptor that exists on October 24, 2007.

(C) Screening Health Risk Assessment

(i) The owner or operator of an existing facility shall conduct a screening health risk assessment if annual hexavalent chromium emissions from the chromium electroplating and chromic acid anodizing operations exceed 15 grams in the calendar year following the year of the facility's applicable effective compliance date specified in Table 2 of paragraph (c)(11) and any calendar year thereafter.

(ii) The screening health risk assessment shall be conducted for hexavalent chromium emissions from the hexavalent chromium electroplating and chromic acid anodizing operations, and in accordance with the most current version of the District's "Risk Assessment Procedures of Rules 1401 and 212" or "Air Toxics Hot Spots Program Risk Assessment Guidelines" (OEHHA Guidelines).

(iii) The owner or operator shall submit the screening health risk assessment to the Executive Officer within 120 days of the end of the calendar year during which the facility's hexavalent chromium emissions exceeded 15 grams.

(iv) The owner or operator may comply with clause (c)(11)(C)(i) by using an existing health risk assessment or screening health risk assessment previously approved by the District provided the existing health risk assessment is:

(I) Based on the most current version of the District's "Risk Assessment Procedures of Rules 1401 and 212" or OEHHA Guidelines; and

(II) representative of the chromium electroplating or chromic acid anodizing operating conditions for the subject year; and

- (iv) Meet a hexavalent chromium emission rate of < 0.0011 milligrams/ampere-hour as measured after the HEPA add-on air pollution control device;
 - (v) Conduct a facility-wide screening health risk assessment for all toxic air contaminant emissions which shall be submitted to the District when filing applications for Permit to Construct/Operate the new equipment. The screening health risk assessment shall be conducted in accordance with the most current version of the District's "Risk Assessment Procedures of Rules 1401 and 212" or *OEHHA Guidelines*; and
 - (vi) Comply with District Rules 1401 and 1401.1, if applicable.
 - (B) A new facility shall be deemed to meet the requirements specified in clauses (c)(13)(A)(i) and (ii) if one of the following criteria is met, even if the facility does not meet the requirement at the time of initial start-up:
 - (i) The requirements specified in clauses (c)(13)(A)(i) and (ii) are met at the time a permit to construct is issued by the District, and substantial use of the permit to construct takes place within one year after it is issued; or
 - (ii) The requirements specified in clauses (c)(13)(A)(i) and (ii) are met at the time a permit to construct is issued by the District, and substantial use of the permit to construct takes place before any zoning change occurs that affects the operation's ability to meet the requirement at the time of initial start-up.
 - (C) Prior to initial start-up, the owner or operator of a new facility shall demonstrate to the District that the new facility meets the requirements specified in paragraph (c)(13).
- (144) Decorative Chromium Electroplating Tanks Using a Trivalent Chromium Bath
- (A) During tank operation, ~~each~~the owner or operator of an existing, modified, or new ~~facility's~~source shall control chromium emissions discharged to the atmosphere by meeting ~~anyone or more~~ anyone or more of the requirements identified below.

Method of compliance	Requirement
Add-on air pollution control device equipment, or chemical fume suppressants forming a foam blanket, or mechanical fume suppressants (i.e. polyballs)	≤ 0.01 milligrams per dry standard cubic meter of air (mg/dscm) (4.4x10 ⁻⁶ gr/dscf)
Certified Cchemical fume suppressants containing a wetting agent	Use wetting agent as bath ingredient component and comply with recordkeeping and reporting provisions of paragraphs (j)(9) and (k)(5).

(B) New facilities that perform electroplating using a trivalent chromium bath shall conduct a facility-wide screening health risk assessment for all toxic air contaminant emissions which shall be submitted to the District when filing applications for Permit to Construct/Operate the new equipment. The screening health risk assessment shall be conducted in accordance with the most current version of the District’s “Risk Assessment Procedures of Rules 1401 and 212” or OEHHA Guidelines.

~~(12) Training and Certification~~

- ~~(A) Chrome plating personnel responsible for environmental compliance, maintaining plating bath chemistries, and testing and recording plating bath surface tension data shall complete a District approved training program every two years. Initial training shall occur prior to May 1, 2004.~~
- ~~(B) On or after May 1, 2004, only persons who have completed a District approved training program and have received a certification issued by the District shall be responsible for recordkeeping associated with environmental compliance, maintaining plating bath chemistries, and testing and recording plating bath surface tension data.~~
- ~~(C) Notwithstanding subparagraph (c)(12)(B), in the event that all persons who have completed a District approved training program leave employment at a facility, the owner or operator may be responsible for recordkeeping associated with environmental compliance, maintaining plating bath chemistries, and testing and~~

~~recording plating bath surface tension data for a period not to exceed two years.~~

(13) ~~Interim Standards for Hexavalent Chrome Electroplating and Chromic Acid Anodizing Facilities~~

~~The following emission limitations shall be in effect until full compliance with paragraphs (c)(8), (c)(9), (c)(10), or (d)(5) is achieved:~~

(A) ~~Hard Chrome Electroplating Operations~~

~~During tank operation, each owner or operator of an existing, modified or new source shall control hexavalent chromium emissions discharged to the atmosphere from that source by reducing the hexavalent chromium emissions from the add-on air pollution control equipment serving the electroplating tank as identified below.~~

(i) ~~Existing Operations (on or before 12/16/93)~~

Facility Size	Controlled ¹ Emissions (lb/yr)	Requirement		
		≤ 60 million amp-hrs ²	> 60 million amp-hrs ²	
			Option 1	Option 2 ³
Large	≥ 10 lbs/yr	≤ 0.006 mg/amp-hr	≤ 0.006 mg/amp-hr	≤ 0.006 mg/amp-hr
Medium	< 10 lbs/yr but ≥ 2 lbs/yr	≤ 0.03 mg/amp-hr	≤ 0.006 mg/amp-hr	≤ 0.03 mg/amp-hr and 0.015 mg/dsem
Small	≤ 2 lbs/yr	≤ 0.15 mg/amp-hr	≤ 0.03 mg/amp-hr	≤ 0.15 mg/amp-hr and 0.015 mg/dsem

(ii) ~~New/Modified Operations (after December 16, 1993)~~

Facility Size	Controlled ¹ Emissions (lb/yr)	Requirement	
		≤ 60 million amp-hrs ²	> 60 million amp-hrs ²
Large	≥ 10 lbs/yr	≤ 0.006 mg/amp-hr	≤ 0.006 mg/amp-hr
Medium/Small	< 10 lbs/yr	≤ 0.03 mg/amp-hr	≤ 0.006 mg/amp-hr

¹ ~~combined hexavalent or total chrome emissions from hard chrome plating operations~~

² ~~maximum cumulative potential rectifier capacity or usage limit~~

³ ~~“Option 2” is an alternative emission limitation for small and medium facilities that elect to demonstrate compliance with both a mg/amp-hr and mg/dsem requirement.~~

(iii) ~~Very Small Operations Using Less Than or Equal to 500,000 Ampere Hours per Year~~

~~The Executive Officer may approve, on a case by case basis, alternative standards for small hard chrome plating operations using less than or equal to 500,000 ampere hours~~

~~per year. The operation shall have been constructed on or before December 16, 1993. At a minimum, the source shall use chemical fume suppressants containing a wetting agent to lower the surface tension of the plating bath to no more than 45 dynes per centimeter (dynes/cm) (3.1×10^{-3} pound force per foot [lbF/ft]), or the surface tension established during testing of a certified fume suppressant under subdivision (f). The Executive Officer may require additional emission reduction techniques as necessary to reduce the public health impact of emissions from the operation. The owner or operator shall comply with the applicable monitoring [subdivision (g)], recordkeeping [subdivision (j)], and reporting [subdivision (k)] requirements. The owner or operator shall submit a plan to the Executive Officer describing the alternative technique and identifying appropriate monitoring, recordkeeping, and reporting requirements. The Executive Officer, with U.S. EPA concurrence, shall approve this plan if equivalent results are obtained. Upon approval, the requirements identified in the plan shall be the applicable requirements under this regulation.~~

~~(B) Decorative Chrome Electroplating and Chromic Acid Anodizing Facilities~~

~~During tank operation, each owner or operator of an existing, modified, or new source shall control hexavalent chromium emissions discharged to the atmosphere by meeting either of the requirements identified below.~~

Method of compliance	Requirement
Add on air pollution control equipment, or chemical fume suppressants forming a foam blanket, or mechanical fume suppressants (i.e. polyballs)	≤ 0.01 milligrams per dry standard cubic meter of air (mg/dscm) (4.4×10^{-6} gr/dscf)
Chemical fume suppressants containing a wetting agent	≤ 45 dynes per centimeter (dynes/cm) (3.1×10^{-3} pound force per foot [lbF/ft])

~~(14) Compliance Plan Submittal~~

- (A) ~~On or before February 1, 2004, the owner or operator of a facility subject to this rule shall submit a compliance plan, subject to plan fees specified in Rule 306. The owner or operator of a facility opting to comply with subparagraph (d)(1)(A), paragraph (d)(2), or submitting permit applications for all equipment subject to this rule to comply with emission limitations in paragraphs (e)(8), (e)(9), or (e)(10) shall not be required to submit a Compliance Plan. The Compliance Plan shall include the following information:~~
- ~~(i) The emission limitation, alternative standard, or alternative compliance option to be complied with, as specified in subdivision (e) or subdivision (d);~~
 - ~~(ii) The method or methods proposed to comply with the applicable provisions of subdivision (e) or subdivision (d);~~
 - ~~(iii) If applicable, the name of the wetting agent fume suppressant(s), certified pursuant to subdivision (f), to be used and the surface tension(s) at which the fume suppressant is certified.~~
- (B) ~~The owner or operator shall comply with all conditions of an approved Compliance Plan.~~
- (C) ~~If a Compliance Plan that proposes compliance with an alternative standard or alternative compliance option is disapproved, the owner or operator shall:~~
- ~~(i) Comply with the timeline in paragraph (e)(8) or (e)(9), as applicable; and~~
 - ~~(ii) Begin use of a wetting agent chemical fume suppressant, certified pursuant to subdivision (f), within 60 days of the date of notification of Compliance Plan disapproval; and~~
 - ~~(iii) Submit a new Compliance Plan for review within 60 days of notification of Compliance Plan disapproval.~~

(15) Permit Application Submittals

- (A) The owner or operator of a hexavalent chromium electroplating or chromic acid anodizing facility subject to this rule, that either does not have a permitted annual ampere-hour limit, or is requesting a reduction of an existing ampere-hour limit, shall submit an application for administrative change of operating condition subject

to fees specified in Rule 301. The application shall be submitted to the District no later than February 24, 2009.

(B) The owner or operator of an existing hexavalent chromium electroplating or chromic acid anodizing facility shall submit permit applications for all new or modified equipment necessary to comply with the requirements of Table 2 of paragraph (c)(11). Permit applications shall be submitted to the District no later than 8 months prior to the applicable effective date of Table 2.

(d) Alternative Compliance Options and Methods

(1) Alternative Interim Compliance Options – Inventory and Health Risk Assessment

(+) In lieu of complying with the interim requirements of paragraphs (c)(8), (c)(9), or (c)(10) an owner/operator may elect to submit an inventory and health risk assessment prepared pursuant to Rule 1402 - Control of Toxic Air Contaminants from Existing Sources, subdivisions (n) [Emissions Inventory Requirements] and (j) [Risk Assessment Procedures].

(A) Health risk assessments approved by the Executive Officer prior to May 2, 2003, shall demonstrate that facility-wide emissions of all toxic air compounds result in a cancer risk of:

(i) Less than 25 in a million for facilities located more than 25 meters from a sensitive receptor~~licensed daycare center, hospital, convalescent home,~~ or a residence, and located more than 100 meters from an existing, as of May 2, 2003, school (kindergarten through grade 12).

(ii) Less than 10 in a million for facilities located 25 meters or less from a sensitive receptor~~licensed daycare center, hospital, convalescent home,~~ or a residence, or located 100 meters or less from an existing, as of May 2, 2003, school (kindergarten through grade 12).

(B) Health risk assessments not approved by the Executive Officer prior to May 2, 2003, shall demonstrate that facility-wide emissions of all toxic compounds with existing controls result in a cancer risk of those specified in (d)(1)(A)(i) or (d)(1)(A)(ii) at their respective receptor distances,~~less than 25 in a million for facilities located more than 25 meters from a sensitive receptor or a residence, or less~~

~~than 10 in a million for facilities located 25 meters or less from a sensitive receptor or a residence, or located 100 meters or less from an existing, as of May 2, 2003, school (kindergarten through grade 12)~~

- (i) The inventory and health risk assessment shall be submitted by January 1, 2004.
 - (ii) After review, the Executive Officer will notify the facility in writing whether a health risk assessment conducted pursuant to this paragraph is approved or disapproved.
 - (iii) If a health risk assessment conducted pursuant to this paragraph is disapproved, or if the approved cancer risk is exceeds those specified in (d)(1)(A)(i) or (d)(1)(A)(ii) at their respective receptor distances, greater than 25 in a million for facilities located more than 25 meters from a sensitive receptor or a residence, or greater than 10 in a million for facilities located 25 meters or less from a sensitive receptor or a residence, or located 100 meters or less from an existing, as of May 2, 2003, school (kindergarten through grade 12), the facility shall comply with the applicable interim requirements of (c)(8), (c)(9), or (c)(10) no later than one year after notification by the District. Within 60 days from the date of disapproval, the owner or operator shall begin use of a wetting agent chemical fume suppressant certified pursuant to subdivision (f).
- (C) The owner or operator of a facility subject to subparagraph (d)(1)(A) or (d)(1)(B) shall comply with enforceable conditions to ensure that controls result in a cancer risk of those specified in (d)(1)(A)(i) or (d)(1)(A)(ii) at their respective receptor distances less than 25 in a million for facilities located more than 25 meters from a sensitive receptor or a residence, or less than 10 in a million for facilities located 25 meters or less from a sensitive receptor or a residence, or located 100 meters or less from an existing, as of May 2, 2003, school (kindergarten through grade 12).

- (D) If a health risk assessment, approved under this paragraph as demonstrating a cancer risk of those specified in (d)(1)(A)(i) or (d)(1)(A)(ii) at their respective receptor distances, less than 25 in a million for facilities located more than 25 meters from a sensitive receptor or a residence, or less than 10 in a million for facilities located 25 meters or less from a sensitive receptor or a residence, or located 100 meters or less from an existing, as of May 2, 2003, school (kindergarten through grade 12), and it is subsequently determined that the to demonstrate actual cancer risks exceedings 25 in a million or 10 in a million, as applicable, the health risk assessment will be disapproved and the owner or operator of the facility shall comply with the specific applicable interim requirements of (c)(8), (c)(9), or (c)(10) no later than one year after notification of disapproval by the District. Within 60 days from the date of notification, the owner or operator shall begin use of a wetting agent chemical fume suppressant certified pursuant to subdivision (f).
- (2) Alternative Interim Compliance Options – Emission Reduction Plan
- (A) In lieu of complying with the specific interim requirements of paragraph (c)(8), the owner or operator of a facility located 25 meters or less from a sensitive receptor licensed daycare center, hospital, convalescent home, or a residence, or located 100 meters or less from an existing, as of May 2, 2003, school (kindergarten through grade 12) may elect to submit an Emission Reduction Plan identifying potential emission reduction strategies on or before May 1, 2004. The plan shall demonstrate that facility-wide hexavalent chromium emissions result in a cancer risk of ≤ 10 in a million and shall include, but is not limited to, the following areas:
- (i) Pollution prevention;
 - (ii) Voluntary, enforceable reduction in ampere-hour limits;
and
 - (iii) Installation of add-on control.
- (B) Following Executive Officer approval, the owner or operator of a facility that elects to implement an Emissions Reduction Plan shall do the following:

- (i) submit all necessary permit applications within 90 days of plan approval; and
 - (ii) install necessary control equipment within 15 months from the date of plan approval; and
 - (iii) conduct any performance test required for compliance with a permit condition or a compliance plan condition pursuant to subdivision (e).
- (3) Alternative Interim Compliance Options – Maximum Installed Controls
 Effective May 1, 2005, in lieu of complying with the interim requirements of ~~sub~~paragraphs (c)(8), (c)(9), or (c)(10) the owner or operator shall use HEPA or an equivalent air pollution control technique and use a wetting agent chemical fume suppressant, certified under subdivision (f), and comply with all applicable permit conditions and approved Compliance Plan conditions.
- (4) Alternative Interim Compliance Options - Facility-wide Mass Emission Rate
- (A) As an alternative to complying with the interim emission limitation requirements of ~~sub~~paragraph (c)(9), the owner or operator of a facility that is located more than 25 meters from a sensitive receptor~~receptor~~licensed daycare center, hospital, convalescent home, or a residence, and located more than 100 meters from an existing, as of May 2, 2003, school (kindergarten through grade 12) shall provide calculations in the Compliance Plan to demonstrate that facility-wide emissions of hexavalent chromium do not exceed the threshold in Table 32 for the appropriate facility operating scenario and regular operating schedule, or the applicable distance-adjusted annual emission level as specified in Appendix 7.

Table 32

Annual Emission Thresholds for Facilities Located More than 25 Meters from a Sensitive Receptor~~Receptor~~Licensed Daycare Center, Hospital, Convalescent Home, or a Residence

Operating Scenario	Regular Operating Schedule	Annual Emission Threshold
Vented to Air Pollution Control Device <u>Equipment</u>	More than 12 hours per day	0.04 lbs/yr
Vented to Air Pollution Control Device <u>Equipment</u>	12 hours per day or less	0.036 lbs/yr

Operating Scenario	Regular Operating Schedule	Annual Emission Threshold
Not Vented to Air Pollution Control <u>Device</u> Equipment	Any	0.025 lbs/yr

- (B) The owner or operator of a facility complying with this subparagraph shall use the Hexavalent Chromium Source Test Parameter Guidance Document to establish testing parameters.
 - (C) The owner or operator of a facility complying with this subparagraph shall update the facility-wide emissions calculations every year using process information from the preceding twelve months, and shall provide such calculations upon request.
- (5) Alternative Interim Compliance Options – Alternative Standards for **Small Existing** Hexavalent Chromium Electroplating and Chromic Acid Anodizing Facilities with Low Annual Ampere-Hour Usage
- (A) Until the emission limits of paragraph (c)(11) become effective, ~~the~~ Executive Officer may approve a Compliance Plan submitted pursuant to paragraph (e)(14) specifying interim alternative standards for small-facilities with actual consumption of electrical current less than or equal to 365,000 ampere-hours for any calendar year. For hard chromium electroplating facilities constructed on or before December 16, 1993, the Executive Officer, with U.S. EPA concurrence shall approve this plan if equivalent results are obtained. Upon approval, the requirements identified in the plan shall be the applicable requirements under this regulation.
 - (B) At a minimum, the hexavalent chromium electroplating or chromic acid anodizing tank shall use chemical fume suppressants containing a wetting agent to lower the surface tension of the electroplating bath to no more than 45 dynes per centimeter (dynes/cm) (3.1×10^{-3} pound-force per foot [lbF/ft]), or the surface tension established during testing of a certified fume suppressant under subdivision (f).
 - (C) Upon approval of a facility’s Compliance Plan, the Executive Officer may require additional emission reduction techniques as necessary to reduce the public health impact of emissions from the operation.

- (D) The owner or operator shall comply with the applicable monitoring [subdivision (g)], recordkeeping [subdivision (j)], and reporting [subdivision (k)] requirements.
- (E) If the ~~small~~-facility is located 25 meters or less from a ~~sensitive receptor~~licensed daycare center, hospital, convalescent home, or a residence, or located 100 meters or less from an existing, as of May 2, 2003, school (kindergarten through grade 12), and actual consumption of electrical current exceeds 500,000 ampere-hours per year after May 2, 2003, the owner or operator shall use HEPA or an equivalent air pollution control technique and use a wetting agent chemical fume suppressant certified under subdivision (f), on all hexavalent chromium electroplating and chromic acid anodizing tanks. An application for a permit to construct the control equipment shall be filed within 90 days of the date of the approved Notice of Violation for the ampere-hour threshold exceedance and the control equipment shall be installed within 15 months from the date of the approved Notice of Violation for the ampere-hour threshold exceedance.
- (F) Emission-Related Exceedance
- (i) Effective November 1, 2003, the owner or operator of a facility subject to paragraph (d)(5) located 25 meters or less from a ~~sensitive receptor~~licensed daycare center, hospital, convalescent home, or a residence, or located 100 meters or less from an existing, as of May 2, 2003, school (kindergarten through grade 12) that is using a wetting agent chemical fume suppressant with no associated add-on air pollution control ~~device(s)~~equipment will begin to accrue notices of violation for emission-related exceedances specified under (d)(5)(F)(ii). The owner or operator of a facility who accrues three or more approved notices of violation for an emission-related exceedance within a five year period shall comply with the emission limitation specified in subparagraph (c)(8)(A) by installing a ventilation system and HEPA controls, or equivalent controls, on all hexavalent chromium electroplating and chromic acid anodizing tanks.

An application for a permit to construct the control equipment shall be filed within 90 days of the date of the third approved notice of violation and the control equipment shall be installed within 15 months from the date of the third approved notice of violation.

(ii) An emission-related exceedance, for the purpose of this rule, is defined as:

(I) exceeding the applicable surface tension limit established under subdivision (f) or subparagraph (d)(5)(B) for a wetting agent chemical fume suppressant; or

(II) exceeding the ampere-hour limit specified in subparagraph (d)(5)(A) by 135,000 ampere-hours per year, or less, or exceeding the ampere-hour limit in an approved Compliance Plan condition for any calendar year; or

(III) exceeding the chromic acid weight concentration limit specified in any permit issued after May 2, 2003; or

(IV) a missing stalagmometer, tensiometer, or ampere-hour meter or a broken or inoperable stalagmometer, tensiometer, or ampere-hour meter unless:

(a) it is repaired or replaced within one week after its breakdown; or

(b) the tank or tanks served by the device are removed from service until the device has been repaired or replaced; or

(c) the owner can provide proof of ordering a new device within 7 days after the device became broken or inoperable, and the device is replaced within 14 days after it became broken or inoperable.

(iii) For the purpose of counting notices of violations which may trigger the installation of controls pursuant to this subparagraph, a notice of violation shall be counted as a single emission-related exceedance even if it cites multiple

emission-related exceedances as defined in subparagraph (d)(5)(F), provided that the multiple emission-related exceedances are based on a single field inspection conducted in one day.

- (iv) The provisions of subparagraph (d)(5)(F) shall apply to an owner or operator of a facility within any five year time period.
- (v) The provisions of this paragraph shall in no way limit the evaluation or prosecution by the District of any notices of violation or any emissions-related exceedances contained therein.

(6) Alternative Compliance Methods for New, Modified and Existing Hexavalent Decorative and Hard Chromium Electroplating and Chromic Acid Anodizing Facilities

The owner or operator of a facility may submit to the District an alternative compliance method(s) to subparagraphs (c)(11)(A) for existing facilities, clause (c)(12)(A)(i) for modified facilities, and clause (c)(13)(A)(iii) for new facilities. In order to operate under this paragraph, the owner or operator shall:

- (A) Submit information contained in Appendix 8 to the Executive Officer.
- (B) Demonstrate that the alternative method(s) is enforceable, provides an equal, or greater hexavalent chromium emission reduction, and provides an equal, or greater risk reduction than would direct compliance with the requirements of (c)(11)(A) for existing facilities, (c)(12)(A)(i) for modified facilities, and (c)(13)(A)(iii) for new facilities.
- (C) Implement alternative method(s), upon approval by the Executive Officer, within the applicable compliance dates of Table 2 of (c)(11)(A) for existing facilities and prior to initial start-up for new or modified facilities.

(e) Performance Test Requirements and Test Methods

(1) Performance Test Requirement

The owner or operator of an existing facility using add-on air pollution control device(s)equipment, foam blanket chemical fume suppressants, or

mechanical fume suppressants to comply with the requirements of paragraphs (c)(8) through (c)(11), ~~(e)(9), (e)(10), or (d)(5), or any source subject to the emission standards in clause (c)(13)(A)(i) or (c)(13)(A)(ii),~~ or any source electing to comply with the mg/dscm emission standard in paragraph (c)(14) ~~or subparagraph (c)(13)(B)~~ shall conduct a performance test to demonstrate compliance with the applicable emission standards within 180 days after initial startup or before the applicable effective date listed in Table 2 of paragraph (c)(11), whichever is sooner. New or modified facilities complying with the requirements of paragraphs (c)(12) and (c)(13) shall conduct a performance test within 60 days after initial start-up.

(2) Use of Existing Performance Test

(A) A performance test conducted prior to July 24, 1997 may be used to demonstrate compliance with applicable interim emission standards specified in (c)(8), (c)(9), (c)(10), and (d)(5), or the mg/dscm emission standard in (c)(14) provided the existing source test is approved by the Executive Officer.

(B) A performance test conducted after January 1, 2000 may be used to demonstrate compliance with emission standards of paragraph (c)(11) or (c)(14) upon District approval. The owner or operator of the facility shall submit the subject performance test to the District's Compliance Division by February 24, 2009 for evaluation, and shall meet, at a minimum, the following criteria:

(i) The test demonstrated compliance with the applicable emission limits of paragraph (c)(11) or (c)(14); and

(ii) The test is representative of the method to control emissions currently in use as of December 5, 2008; and

(iii) The test was conducted using one of the approved test methods specified in paragraph (e)(3).

(3) Approved Test Methods

(A) Emissions testing shall be conducted in accordance with one of the following test methods:

(i) CARB Test Method 425, last amended July 28, 1997, (section 94135, Title 17, California Code of Regulations (CCR)); or

- (ii) U.S. EPA Method 306, (40 CFR 63 Appendix A) with a minimum of three test runs; or
 - (iii) SCAQMD Method 205.1, for results reported as total chromium.
 - (B) Emissions testing from the cover of electroplating and anodizing tanks shall be conducted in accordance with Smoke Test to Verify the Seal Integrity of Covers Designed to Reduce Chromium Emissions from Electroplating and Anodizing Tanks procedures (See Appendix 5).
 - (C) Surface tension using a tensiometer shall be measured in accordance with U.S. EPA Method 306B (40 CFR 63 Appendix A). Surface tension using a stalagmometer shall be measured using the procedure set forth in Appendix 10, or an alternative procedure approved by the District.
- (4) Pre-Test Protocol
 - (A) Facilities subject to the provisions of paragraph (e)(1), above, that are either installing new equipment or modifying existing equipment, shall submit a pre-test protocol at least 60 days prior to conducting a performance test. Facilities that are conducting a performance test for existing equipment that require no modification, shall submit a pre-test protocol to the District's Compliance Division no later than 8 months prior to the applicable effective date of Table 2 of paragraph (c)(11).
 - (B) The pre-test protocol shall include the performance test criteria of the end user and all assumptions, required data, and calculated targets for testing the following:
 - (i) target chromium concentration;
 - (ii) preliminary chromium analytical data; and
 - (iii) planned sampling parameters.
 - (C) In addition, the pre-test protocol shall include information on equipment, logistics, personnel, and other resources necessary for an efficient and coordinated test.
- (5) Emission Points Test Requirements

Each emission point subject to the requirements of this rule shall be tested unless a waiver is granted by U.S. EPA and approved by the Executive Officer.

- (6) For any interim alternative compliance option in subdivision (d) that requires the results of a performance test to demonstrate facility-wide emissions or cancer risk, or any facility operating under an alternative compliance method pursuant to paragraph (d)(6), the owner or operator shall submit a performance test conducted pursuant to subdivision (e).

(7) Capture Efficiency

(A) The owner or operator of a facility using an add-on air pollution control device to comply with the requirements of paragraphs (c)(8) through (c)(13), (d)(5), (d)(6), or any source electing to comply with the mg/dscm emission standard in paragraph (c)(14), shall demonstrate that all emissions are captured by the associated ventilation system by a quantitative measurement approved by the District. The demonstration shall be made during any performance test specified in paragraph (e)(1) conducted after December 5, 2008. An example of an approved quantitative measurement 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.

(B) The owner or operator of a facility subject to (e)(7)(A) shall periodically conduct a smoke test in order to demonstrate continuous compliance with the capture efficiency of the ventilation system. The test shall be:

(i) Conducted using the method described in Appendix 9, or any other method deemed acceptable by the Executive Officer;

(ii) Conducted initially upon start-up for new and modified facilities, and within 60 days of the effective date of this rule for existing facilities; and

(iii) Conducted periodically by the facility at least once every six months of a previously conducted test.

(C) The owner or operator of a ventilation system that demonstrates non-compliance with any smoke test shall immediately shutdown, upon discovery, all electroplating or anodizing lines associated with such ventilation systems until a smoke test demonstrating full compliance with subparagraph (e)(7)(B) is achieved.

(f) Certification of Wetting Agent Chemical Fume Suppressants

Any wetting agent chemical fume suppressant used to comply with the requirements of this rule shall be certified by the Executive Officer as able to reduce or suppress hexavalent chromium emissions at the surface of an electroplating or anodizing bath through the reduction of surface tension of the bath to a level at which an emission factor ~~of below~~ 0.01 milligrams per ampere hour is achieved. Wetting agent chemical fume suppressants shall meet, at a minimum, a surface tension ~~of below~~ 45 dynes/cm ~~or less, as measured by a stalagmometer, or below 35 dynes/cm, as measured by a tensiometer,~~ unless an alternative is approved pursuant to subdivision (m). The Executive Officer will publish and periodically update a list of certified chemical fume suppressants.

(g) Parameter Monitoring

(1) Add-On Air Pollution Control ~~Device~~Equipment

(A) Pressure Drop

The owner or operator shall continuously monitor the pressure drop across an add-on air pollution control device such as a composite mesh-pad (CMP), packed-bed scrubber (PBS), a CMP/PBS, fiber-bed mist eliminator, and a High Efficiency Particulate Arrestors (HEPA) filter with a mechanical gauge. The gauge shall be located so that it can be easily visible and in clear sight of the operation or maintenance personnel. The pressure drop shall be maintained within ± 1 inch of water of the value established during the performance test to demonstrate compliance with the emission limitation for CMP, PBS, a CMP/PBS, and a fiber-bed mist eliminator. The pressure drop shall be maintained within $-1/2$ times to $+2$ times the inches of water of the value established during the performance test to demonstrate compliance with the emission limitation for HEPA filters.

(B) Inlet Velocity Pressure

The owner or operator shall continuously monitor the inlet velocity pressure of a packed-bed scrubber with a mechanical gauge. The gauge shall be located so that it ~~is~~can be easily visible and in clear sight of the operation or maintenance personnel. The inlet velocity pressure shall be maintained within ± 10 percent of the value

established during the performance test to demonstrate compliance with the emission limitation.

(2) Wetting Agent Chemical Fume Suppressants (Excluding Decorative Chromium Electroplating Tanks Using a Trivalent Chromium Bath)

(A) The owner or operator shall monitor the surface tension of the chromium electroplating or chromic acid anodizing tank that contains a wetting agent certified chemical fume suppressant with either a stalagmometer or tensiometer using the applicable method pursuant to subparagraph (e)(3)(C)U.S. EPA Method 306B. The surface tension shall be maintained ~~at or~~ below the respective value established in the list of certified chemical fume suppressants under pursuant to subdivision (f), or at or below a more stringent value specified in permit conditions or approved Compliance Plan conditions ~~for permits or Compliance Plan approvals issued after May 2, 2003~~. Surface tension shall be measured daily for 20 operating days, and weekly thereafter as long as there is no violation of the surface tension requirement. If a violation occurs, the measurement frequency shall return to daily for 20 operating days, and weekly thereafter.

(B) The owner or operator of a facility operating under an approved alternative compliance method pursuant to paragraph (d)(6), and using chemical fume suppressants as all or partial control of hexavalent chromium emissions must measure and monitor the surface tension of the electroplating or anodizing bath daily. The surface tension must be maintained at or below the surface tension measured during the performance test.

(3) Fume Suppressants Forming a Foam Blanket

The owner or operator shall monitor the foam blanket thickness across the surface of the chromium electroplating or chromic acid anodizing tank. The foam blanket thickness shall be maintained consistent with the requirements established during the performance test to demonstrate compliance with the emission limitation. Foam thickness shall be measured hourly for 15 operating days, and daily thereafter as long as there is no violation of the foam thickness requirement. If a violation occurs, the measurement frequency shall return to hourly for 15 operating days, and daily thereafter.

(4) Polyballs or Similar Mechanical Fume Suppressants

The owner or operator shall visually inspect the chromium electroplating or chromic acid anodizing tank for coverage comparable to the coverage during the performance test daily.

(h) Inspection and Maintenance Requirements

- (1) Owners or operators of Hard and decorative hexavalent chromium electroplating, and chromic acid anodizing operations using an add-on air pollution control device equipment shall comply with the applicable inspection and maintenance requirements listed in Table 43. The owner or operator of an add-on air pollution control device custom designed for a specific operation shall develop operating and maintenance requirements. The requirements shall be submitted to the District for review and approval no later than 120 days after the effective date of this rule for custom systems existing before December 5, 2008, and prior to initial start-up for custom systems installed on or after December 5, 2008. The requirements and frequency of inspection must be sufficient to ensure compliance.

Table 43
Summary of Inspection and Maintenance Requirements for Sources Using
Add-on Air Pollution Control Device(s) Equipment

Control Technique/Equipment	Inspection and Maintenance Requirements	Frequency
Composite mesh-pad (CMP) system.	1. Visually inspect device to ensure that there is proper drainage, no unusual chromic acid buildup on the pads, and no evidence of chemical attack that affects the structural integrity of the device.	1. Once per quarter.
	2. Visually inspect back portion of the mesh pad closest to the fan to ensure there is no breakthrough of chromic acid mist. 3. Visually inspect ductwork from tank to the control device to ensure there are no leaks. 4. Perform washdown of the composite mesh-pads in accordance with manufacturer's recommendations.	2. Once per quarter. 3. Once per quarter. 4. Per manufacturer.
Packed-bed scrubber (PBS)	1. Visually inspect device to ensure there is proper drainage, no unusual chromic acid buildup on the packed-beds, and no evidence of chemical attack that affects the structural integrity of the device. 2. Visually inspect back portion of the chevron blade mist eliminator to ensure that it is dry and there is no breakthrough of chromic acid mist. 3. Same as number 3 above for CMP system. 4. Add fresh makeup water to the packed-bed ^A .	1. Once per quarter. 2. Once per quarter. 3. Once per quarter. 4. Whenever makeup is added.
PBS/CMP system	1. Same as for CMP system. 2. Same as for CMP system.	1. Once per quarter. 2. Once per quarter.

^A Horizontal packed-bed scrubbers without continuous recirculation must add make-up water to the top of the packed-bed.

Table 43
Summary of Inspection and Maintenance Requirements for Sources
Using Add-on Air Pollution Control ~~Device(s)~~Equipment (cont)

Control Technique/Equipment	Inspection and Maintenance Requirements	Frequency
	<ol style="list-style-type: none"> 3. Same as for CMP system. 4. Same as for CMP system 	<ol style="list-style-type: none"> 3. Once per quarter. 4. Per manufacturer.
Fiber-bed mist eliminator ^B	<ol style="list-style-type: none"> 1. Visually inspect fiber-bed unit and prefiltering device to ensure there is proper drainage, no unusual chromic acid buildup in the units, and no evidence of chemical attack that affects the structural integrity of the devices. 2. Visually inspect ductwork from tank or tanks to the control device to ensure there are no leaks. 3. Perform washdown of fiber elements in accordance with manufacturer's recommendations. 	<ol style="list-style-type: none"> 1. Once per quarter. 2. Once per quarter. 3. Per manufacturer.
High Efficiency Particulate Arrestors filter (HEPA)	<ol style="list-style-type: none"> 1. Look for changes in the pressure drop. 2. Replace HEPA filter. 	<ol style="list-style-type: none"> 1. Once per week. 2. Per manufacturer's specifications or District's requirement.
Chromium Tank Covers	<ol style="list-style-type: none"> 1. Drain the air-inlet (purge air) valves at the end of each day that the tank is in operation. 2. Visually inspect access door seals and membranes for integrity. 3. Drain the evacuation unit directly into the electroplating tank or into the rinse tanks (for recycle into the electroplating tank). 	<ol style="list-style-type: none"> 1. Once per day. 2. Once per week. 3. Once per week.

^B Inspection and maintenance requirements for the control device installed upstream of the fiber-bed mist eliminator to prevent plugging do not apply as long as the inspection and maintenance requirements for the fiber-bed unit are followed.

Table [43](#)
 Summary of Inspection and Maintenance Requirements for Sources
 Using Add-on Air Pollution Control [Device\(s\)Equipment](#) (cont)

Control Technique/Equipment	Inspection and Maintenance Requirements	Frequency
	4. Visually inspect membranes for perforations using a light source that adequately illuminates the membrane (e.g., Grainger model No. 6X971 Fluorescent Hand Lamp). 5. Visually inspect all clamps for proper operation; replace as needed. 6. Clean or replace filters on evacuation unit. 7. Visually inspect piping to, piping from, and body of evacuation unit to ensure there are no leaks and no evidence of chemical attack. 8. Replace access door seals, membrane evacuation unit filter, and purge air inlet check valves in accordance with the manufacturer's recommendations.	4. Once per month. 5. Once per month. 6. Once per month. 7. Once per quarter. 8. Per manufacturer.
Pitot tube	Backflush with water, or remove from the duct and rinse with fresh water. Replace in the duct and rotate 180 degrees to ensure that the same zero reading is obtained. Check Pitot tube ends for damage. Replace Pitot tube if cracked or fatigued.	Once per quarter.
Ampere-hour meter	Install and maintain per manufacturer's specifications.	Per manufacturer.

- (2) Hard and decorative [chromium](#) electroplating, and chromic acid anodizing operations using chemical fume suppressants (i.e. wetting agent, foam) or mechanical fume suppressants (i.e., polyballs) shall comply with the applicable inspection and maintenance requirements in Table [54](#).

Table [54](#)
 Summary of Inspection and Maintenance Requirements for Sources Using
 Chemical or Mechanical Fume Suppressants

Equipment	Inspection and Maintenance Requirement for Monitoring Equipment	Frequency
Ampere-hour meter	Install and maintain per manufacturer's specifications.	Per manufacturer.
Stalagmometer/ Tensiometer	Calibrate and maintain per manufacturer's specifications.	Per manufacturer.

(i) Operation and Maintenance Plan Requirements

(1) Operation and Maintenance Plan

The owner or operator subject to the inspection and maintenance requirements of paragraph (h)(1) [and \(h\)\(2\)](#) shall prepare an operation and maintenance plan. For major sources, the plan shall be incorporated by reference into the source's Title V permit. The plan shall incorporate the inspection and maintenance requirements for that device or monitoring equipment, as identified in [Tables 4 and 54](#), [and](#) shall include the following elements:

- (A) A standardized checklist to document the operation and maintenance of the source, the add-on air pollution control device, and the process and control system monitoring equipment; and
- (B) Procedures to be followed to ensure that equipment is properly maintained.

The owner or operator may use applicable standard operating procedure (SOP) manuals, Occupational Safety and Health Administration (OSHA) plans, or other existing plans, provided the alternative plans meet the requirements of this subdivision.

(2) Operation and Maintenance Plan Availability

The owner or operator shall keep the written operation and maintenance plan on record after it is developed, to be made available for inspection, upon request.

(3) Operation and Maintenance Plan Modifications

Any changes made by the owner or operator should be documented in an addendum to the plan. In addition, the owner or operator shall keep previous (i.e., superseded) versions of the operation and maintenance plan on record to be made available for inspection, upon request, for a period of 5 years after each revision to the plan.

(4) Breakdown Provisions In Operation and Maintenance Plan

The operation and maintenance plan shall be revised as necessary to minimize breakdowns.

(j) Recordkeeping

(1) Inspection records for sources using add-on control air pollution control devices:

The owner or operator shall maintain inspection records to document that the inspection and maintenance requirements of subdivision (h) and Tables [4](#) and [53](#), and that the provisions of the operation and maintenance plan required by subdivision (i) have been met. The record can take the form of a checklist and should identify:

- (A) the device inspected;
- (B) the date and time of inspection;
- (C) a brief description of the working condition of the device during the inspection;
- (D) maintenance activities performed on the components of the air pollution control system (i.e. duct work replacement, filter pad replacement, fan replacement, etc.); and
- (E) any actions taken to correct deficiencies found during the inspection.

(2) Inspection Records for Sources Using Chemical Fume Suppressants (i.e. wetting agent, foam) or Mechanical Fume Suppressants (i.e., polyballs).

The owner or operator shall maintain inspection records to document that the inspection and maintenance requirement of paragraph (h)(2) and Tables [4](#) and [54](#) have been met. The record can take the form of a checklist.

(3) Performance Test [and Smoke Test](#) Records

The owner or operator shall maintain test reports and records documenting the conditions and results of all performance tests [and smoke tests](#) required

by subdivision (e). The records shall include performance test results required to determine compliance with paragraph (g)(1), including the pressure drop established during the performance test to demonstrate compliance with the emission limitation for composite mesh pad (CMP), packed bed scrubber (PBS), and CMP/PBS, and a fiber-bed mist eliminator and the inlet velocity pressure established during the performance test to demonstrate compliance with the emission limitation.

(4) Monitoring Data Records

The owner or operator shall maintain records of ~~monitoring data~~continuously recorded ampere-hour data required by paragraph (c)(~~21~~) and monitoring data required by subdivision (g) that are used to demonstrate compliance with the requirements of subdivision (c) and subdivision (d), if applicable, including the date and time the data are collected.

(A) Cumulative Rectifier Usage Records

The owner or operator shall, on a monthly basis, Rrrecord the actual cumulative rectifier usage expended during each month of the reporting period, and the total usage expended to date.

(B) Pressure Drop

The owner or operator shall record the pressure drop once a week. The pressure drop shall be recorded daily beginning February 1, 2009~~once a week~~.

(C) Inlet Velocity Pressure

The owner or operator shall record the inlet velocity pressure once a week. The inlet velocity pressure shall be recorded daily beginning February 1, 2009~~weekly~~.

(D) Surface Tension

(i) The owner or operator shall record the surface tension daily for 20 operating days, and weekly thereafter as long as there is no violation of the surface tension requirement. If the surface tension exceeds the respective value~~level~~ established in the list of certified chemical fume suppressants pursuant to ~~under~~ subdivision (f), or a more stringent value specified in permit conditions or approved Compliance Plan conditions, the owner or operator shall again record the

surface tension daily for 20 operating days, and weekly thereafter.

(ii) For facilities operating under an approved alternative compliance method pursuant to paragraph (d)(6), and using chemical fume suppressants as all or partial control of hexavalent chromium emissions, the owner or operator shall record the surface tension of the electroplating or anodizing bath daily.

(E) Mechanical Fume Suppressant and Foam Blankets Thickness

(i) The owner or operator using a foam blanket to comply with the emission standards of subdivisions (c) or (d), shall record the foam thickness hourly for 15 operating days, and daily thereafter as long as there is no violation of the foam thickness requirement. If a violation occurs, the measurement frequency shall return to hourly for 15 operating days, and daily thereafter.

(ii) The owner or operator using polyballs or other mechanical fume suppressants to comply with the emission standards of subdivisions (c) or (d), shall record the coverage of the electroplating or anodizing bath daily. Coverage shall be reported as a percentage of bath surface area.

(5) Breakdown Records

The owner or operator shall maintain records of the occurrence, duration, and cause (if known) and action taken on each breakdown.

(6) Records of Excesses

The owner or operator shall maintain records of exceedances of: the emission limitations in subdivision (c) and (d), the monitoring parameter values established under subdivision (g), or any site-specific operating parameters established for alternative equipment. The records shall include the date of the occurrence, the duration, cause (if known), and, where possible, the magnitude of any excess emissions.

~~(7) Records Demonstrating Facility Size~~

~~An owner or operator may demonstrate the size of a hard chromium electroplating facility through the definitions in subdivision (b). Alternatively, an owner or operator of a facility with a maximum cumulative potential rectifier capacity of 60 million amp-hr/yr or more may~~

~~be considered small or medium if the actual cumulative rectifier usage is less than 60 million amp hr/yr as demonstrated using either of the following procedures:~~

~~(A) Annual Actual Cumulative Rectifier Capacity~~

~~Show by records that the facility's previous annual actual cumulative rectifier capacity was less than 60 million amp hr/yr, by using nonresettable ampere hour meters and keeping monthly records of actual ampere hour capacity for each 12-month rolling period following the compliance date. The actual cumulative rectifier capacity for the previous 12-month rolling period shall be tabulated monthly by adding the capacity for the current month to the capacities for the previous 11 months; or~~

~~(B) Maximum Cumulative Potential Rectifier Usage Limit~~

~~By accepting a limit on the maximum cumulative potential rectifier usage of a hard chromium electroplating facility through a Title V permit condition or a District operating permit condition and by maintaining monthly records in accordance with subparagraph (j)(4)(A) to demonstrate that the limit has not been exceeded.~~

- (87) The owner or operator shall maintain records demonstrating compliance with housekeeping practices, as required by paragraph (c)(54), including the dates on which specific activities were completed, and records showing that chromium or chromium-containing wastes have been stored, disposed of, recovered, or recycled using practices that do not lead to fugitive dust.
- (98) Records of Fume Suppressant Additions
For sources using fume suppressants to comply with the standards, the owner or operator shall maintain records of the date, time, approximate volume, and product identification of the fume suppressants that are added to the electroplating or anodizing bath.
- (109) Records of Trivalent Bath Components
For sources complying with paragraph (c)(144) using trivalent chromium baths, the owner or operator shall maintain records of the bath components purchased, with the wetting agent clearly identified as a bath constituent contained in one of the components.

(10) Records of Filter Purchase and Disposal

For sources using add-on air pollution control devices to comply with the standards, the owner or operator shall retain purchase orders for filters and waste manifest records for filter disposal.

(11) New/Modified Source Review Information

The owner or operator shall maintain records supporting the notifications and reports required by the District's new source review provisions and/or subdivision (1).

(12) Records Retention

All records shall be maintained for five years, at least two years on site.

(k) Reporting

(1) Performance Test Documentation

(A) Notification of Performance Test

(i) The owner or operator of a source shall notify the Executive Officer that a performance test shall be conducted at least 60 calendar days before the performance test is scheduled.

(ii) The provisions in clause (k)(1)(A)(i), above, do not apply if the performance test was conducted prior to July 24, 1997 and was approved by the Executive Officer and the U.S. EPA.

(B) Reports of Performance Test Results

The owner or operator shall report performance test results to the Executive Officer. Reports of performance test results shall be submitted no later than 90 calendar days following the completion of the required performance test, and shall be submitted as part of the notification of compliance status required by paragraph (k)(2).

(C) The content of performance test reports shall contain, at a minimum, the information identified in Appendix 1.

(2) Initial Compliance Status Report

An initial compliance status report is required each time that a source becomes subject to the requirements of this rule. The owner or operator shall submit to the Executive Officer an initial compliance status report, signed by the responsible official who shall certify its accuracy, attesting to whether the source has complied with this rule.

- (A) Initial Compliance Status Report Due Date
The initial compliance status report for existing facilities shall be submitted to the Executive Officer no later than ~~30 calendar days after the effective date of this rule~~ April 24, 2008, for existing sources, or at start-up for new sources. New or modified facilities shall submit the initial compliance status report upon start-up.
- (B) The ~~content of the~~ initial compliance status report shall contain, at a minimum, the information identified in Appendix 2.
- (3) Ongoing Compliance Status and Emission Reports
The owner or operator shall submit a summary report to the Executive Officer to document the ongoing compliance status.
- (A) Frequency of Ongoing Compliance Status and Emission Reports
The report shall be submitted on or before February 1 for all sources and shall include information covering the preceding calendar year (January 1 through December 31).
- (B) The content of ongoing compliance status and emission reports shall, at a minimum, contain the information identified in Appendix 3.
- (4) Reports of Breakdowns
The owner or operator shall report breakdowns as required by District Rule 430.
- (5) Reports Associated with Trivalent Chromium Baths Exclusively Using a Chemical Fume Suppressant Containing a Wetting Agent
Owners or operators with trivalent chromium baths exclusively using a certified chemical fume suppressant containing a wetting agent to comply with subparagraph (c)(14)(A) are not subject to paragraphs (1) through (3) of this subdivision, but shall instead submit the following reports:
- (A) Sources Currently Using Trivalent Chromium
No later than November 24, 2007~~30 calendar days after the effective date of this rule~~, the owner or operator of an existing facility shall submit a notification of compliance status that contains the information specified in (k)(5)(A)(i) through (iii). New and modified facilities shall submit this information within 30 days after the effective date of this rule.;
- (i) The name and address of each source subject to this paragraph;

- (ii) A statement that a trivalent chromium process that incorporates a wetting agent will be used to comply; and
- (iii) The list of bath components that comprise the trivalent chromium bath, with the wetting agent clearly identified.

(B) Sources Changing to Trivalent Chromium

Within 30 days of a change to the trivalent chromium electroplating process, a report that includes:

- (i) A description of the manner in which the process has been changed and the emission limitation, if any, now applicable to the source; and
- (ii) The notification and reporting requirements of paragraphs (1), (2), and (3) of this subdivision, if the source complies with the emission limitation option, or paragraph (5) of this subdivision, if the source uses a wetting agent to comply. The report shall be submitted in accordance with the schedules identified in those paragraphs

(6) Adjustments to the Timeline for Submittal and Format of Reports

The Executive Officer may adjust the timeline for submittal of periodic reports, allow consolidation of multiple reports into a single report, establish a common schedule for submittal of reports, or accept reports prepared to comply with other state or local requirements. Adjustments shall provide the same information and shall not alter the overall frequency of reporting.

(1) New and Modified Sources

(1) Notification of Construction

After the effective date of this rule no person may construct or modify a source, such that it becomes a source subject to this section, without submitting a notification of construction or modification to the Executive Officer and receiving approval in advance to construct or modify the source. The contents of the Notification of Construction shall include information as listed in Appendix 4.

(2) New Source Review Rules

In lieu of complying with the requirements in paragraph (1)(1) of this subdivision, a facility may fulfill these requirements by complying with the

District's new source review rule or policy, provided similar information is obtained.

(m) Procedure for Establishing Alternative Requirements

(1) Request Approval of an Alternative Requirement

Any person may request approval of an alternative requirement. The person seeking such approval shall submit the proposed alternative requirement to the Executive Officer for approval. The request shall include the proposed alternative requirement, the reason for requesting the alternative requirement, and information demonstrating that the criteria for approval identified in Appendix 6 is met.

(2) Approval of an Alternative Requirement

The Executive Officer may approve an alternative requirement if it determines that application of the alternative requirement meets the criteria for approval identified in Appendix 6 and the Executive Officer has submitted the proposed alternative requirements and has received concurrence from the applicable concurring agencies identified in Appendix 6.

(3) Approval Criteria

Nothing in this subdivision prohibits the Executive Officer from establishing approval criteria more stringent than that required in Appendix 6.

(4) Alternatives Already Approved by U.S. EPA

Waivers for alternatives already approved by the U.S. EPA prior to October 249, 2007~~1998~~ shall remain in effect ~~unless rescinded by U.S. EPA~~until the effective dates of the specified requirements become effective.

(n) Exemptions

(1) This rule shall not apply to process tanks associated with a chromium electroplating or chromic acid anodizing process, ~~but~~ in which neither chromium electroplating nor chromic acid anodizing is taking place. Examples of such tanks include, but are not limited to, rinse tanks, etching tanks, and cleaning tanks. Tanks that contain a chromium solution, ~~but~~ in which no electrolytic process occurs, are not subject to this rule. An

example of such a tank is a chromiiume conversion coating tank where no electrical current is applied.

- (2) The requirements of subdivisions (g), (h), and (i) do not apply to decorative chromiiume electroplating tanks using a trivalent chromium bath with a wetting agent.
- (3) The requirements of paragraphs (c)(8), ~~(e)(9)~~, ~~(e)(10)~~, ~~(e)(11)~~, through (c)(143), (d)(5) and (d)(65), and subdivision (i) do not apply during periods of equipment breakdown, provided the provisions of ~~the~~ District's Rule 430 are met, notwithstanding subparagraph (b)(3)(B) of Rule 430.

(o) Title V Permit Requirements

The owner or operator of a major source facility subject to the requirements of this section is required to obtain a Title V permit from the District in accordance with the procedures set forth in District Regulation XXX.

(p) Rule 1402 Inventory Requirements

The owner or operator of chromium electroplating or chromic acid anodizing tanks at a facility that is in compliance with this rule will not be required to submit an emission inventory to the Executive Officer for emissions of toxic compounds subject to this rule, pursuant to subparagraph (n)(1)(B) of Rule 1402 - Control of Toxic Air Contaminants from Existing Sources.

(q) Chromium Electroplating or Chromic Acid Anodizing Kits Requirements

- (1) Except as provided in paragraph (q)(2), no person shall sell, supply, offer for sale, or manufacture for sale in the District, any chromium electroplating or chromic acid anodizing kit.
- (2) The provisions of paragraph (q)(1) do not apply to any person that sells, supplies, offers for sale, or manufactures for sale in the District a chromium electroplating or chromic acid anodizing kit to the owner or operator of a permitted facility at which chromium electroplating or chromic acid anodizing is performed.
- (3) No person shall use a chromium electroplating or chromic acid anodizing kit to perform chromium electroplating or chromic acid anodizing unless these activities are performed at a permitted facility that complies with the requirements of this rule.
- (4) For the purposes of this section, "chromium electroplating or chromic acid anodizing kit" means chemicals and associated equipment for conducting

chromium electroplating or chromic acid anodizing including, but not limited to, internal and external tank components.

Appendix 1 - Content of Performance Test Reports.

Performance test reports shall contain, at a minimum, the following information:

1. A brief process description;
2. Sampling location description(s);
3. A description of sampling and analytical procedures and any modifications to standard procedures;
4. Test results [in milligrams/ampere-hour](#);
5. Quality assurance procedures and results;
6. Records of operating conditions during the test, preparation of standards, and calibration procedures;
7. Original data for field sampling and field and laboratory analyses;
8. Documentation of calculations; and
9. Any other information required by the test method.

Note: Test reports consistent with the provisions of ARB Method 425 will fulfill the above performance test report content requirement.

Appendix 2 - Content of Initial Compliance Status Reports.

Initial compliance status reports shall contain, at a minimum, the following information:

1. Facility name, AQMD ID number, facility address, owner/operator name, and telephone number;
2. The distance ~~from the center~~ of the facility to the property line of the nearest commercial/industrial building, ~~residence~~, and sensitive receptor using measurement methods provided in subparagraph (c)(11)(B);
3. Sensitive receptor locations, if they are located within one-quarter of a mile from the center of the facility;
4. Building parameters
 - Stack height in feet (point sources); or
 - Building area in square feet (volume sources).
5. Maximum potential rectifier capacity per tank and facility maximum operating schedule (more than or less than or equal to 12 hours per day);
6. The applicable emission limitation and the methods that were used to determine compliance with this limitation;
7. Facility-wide emissions established under paragraph (d)(4), if applicable;
8. If a performance test is required, the test report documenting the results of the performance test, which contains the elements listed in Appendix 1;
9. If an initial smoke test demonstrating the capture efficiency of a ventilation system is required, the test report documenting the results which contain the elements listed in Appendix 9;
109. The type and quantity, in pounds, of hazardous air pollutants emitted by the source. (If the owner or operator is subject to the construction and modification provisions of subdivision (l) and had previously submitted emission estimates, the owner or operator shall state that this report corrects or verifies the previous estimate.);
110. For each monitored parameter for which a compliant value is to be established under subdivision (g), the specific operating parameter value, or range of values, that corresponds to compliance with the applicable emission limit;
121. The methods that will be used to determine continuous compliance, including a description of monitoring and reporting requirements, if methods differ from those identified in this section;
132. A description of the air pollution control technique for each emission point;

- 143. A statement that the owner or operator has completed and has on file the operation and maintenance plan as required by subdivision (i);
- ~~14. If the owner or operator is determining facility size based on actual cumulative rectifier usage, records to support that the facility is small or medium. For existing sources, records from any 12-month period preceding the compliance date shall be used or a description of how operations will change to meet a small or medium designation shall be provided. For new sources, records of projected rectifier usage for the first 12-month period of tank operation shall be used;~~
- 15. The actual cumulative ampere-hour usage expended during the preceding calendar year, if operation occurred;
- 16. 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); and
- 157. A statement by the owner or operator as to whether the source has complied with the provisions of this section.

Appendix 3 - Content of Ongoing Compliance Status and Emission Reports.

Ongoing compliance status and emission reports shall, at a minimum, contain the following information:

1. The company name and address of the source;
2. An identification of the operating parameter that is monitored for compliance determination, as required by subdivision (g);
3. The relevant emission limitation for the source, and the operating parameter value, or range of values, that correspond to compliance with this emission limitation as specified in the notification of initial compliance status required by Appendix 2;
4. The beginning and ending dates of the calendar year for the reporting period;
5. A description of the type of process performed in the source;
6. The actual cumulative rectifier usage expended during the calendar year of the reporting period, on a month-by-month basis, if the source is a hard or decorative chromium electroplating tank or chromic acid anodizing tank;
7. Updated facility-wide emissions established under subparagraph (d)(4), if applicable;
8. Hexavalent chromium and trivalent chromium throughputemissions data in poundsgrams per year for the reporting period;
9. ~~Residences and s~~Sensitive receptor locationsdistances, if they are located within ¼ of mile from the center of the facility and facility maximum operating schedule (more than or less than or equal to 12 hours per day), if changed since submittal of the initial compliance status report or subsequent ongoing compliance status and emission reports. Sensitive receptor distances shall be measured using methods provided in (c)(11)(B);
10. A summary of any excess emissions or exceeded monitoring parameters as identified in the records required by paragraph (j)(6);
11. A certification by a responsible official that the inspection and maintenance requirements in subdivision (h) were followed in accordance with the operation and maintenance plan for the source;
12. If the operation and maintenance plan required by subdivision (i) was not followed, an explanation of the reasons for not following the provisions, an assessment of whether any excess emissions and/or monitoring parameter excesses are believed to have occurred, and a copy of the record(s) required by paragraph (j)(1) documenting that the operation and maintenance plan was not followed;

- 13. If applicable, results of periodic smoke tests demonstrating capture efficiency of ventilation system(s) conducted during the reporting period;
- ~~14~~3. A description of any changes in monitoring, processes, or controls since the last reporting period;
- 15. A statement that the owner or operator, or personnel designated by the owner or operator has, within the last 2 years, completed a District-approved training program pursuant to paragraph (c)(7);
- 14~~6~~. The name, title, and signature of the responsible official who is certifying the accuracy of the report; and
- 15~~7~~. The date of the report.

Appendix 4 - Notification of Construction Reports.

Notification of Construction reports shall contain the following information:

- (A) The owner or operator's name, title, and address;
- (B) The address (i.e., physical location) or proposed address of the source if different from the owner's or operator's;
- (C) A notification of intention to construct a new source or make any physical or operational changes to a source that may meet or has been determined to meet the criteria for a modification;
- (D) The expected commencement and completion dates of the construction or modification;
- (E) The anticipated date of (initial) startup of the source;
- (F) The type of process operation to be performed (hard or decorative chromium electroplating, or chromic acid anodizing);
- (G) A description of the air pollution control technique to be used to control emissions, such as preliminary design drawings and design capacity if an add-on air pollution control device is used; and
- (H) An estimate of emissions from the source based on engineering calculations and vendor information on control device efficiency, expressed in units consistent with the emission limits of this subpart. Calculations of emission estimates should be in sufficient detail to permit assessment of the validity of the calculations.

Note: A facility can fulfill these report content requirements by complying with the District's new source review rule or policy, provided similar information is obtained.

Appendix 5 - Smoke Test for Chromium Tank Covers.**SMOKE TEST TO VERIFY THE SEAL INTEGRITY OF COVERS DESIGNED TO REDUCE CHROMIUM EMISSIONS FROM ELECTROPLATING AND ANODIZING TANKS****1. Applicability and Principle**

1.1 **Applicability.** This alternative method is applicable to all hard chromium electroplating and anodizing operations where a chromium tank cover is used on the tank for reducing chromium emissions.

1.2 **Principle.** During chromium electroplating or anodizing operations, bubbles of hydrogen and oxygen gas generated during the process rise to the surface of the tank liquid and burst. Upon bursting, tiny droplets of chromic acid (chromium mist) become entrained in the air above the tank. Because the chromium tank cover completely encloses the air above the tank, the chromium mist either falls back into the solution because of gravity or collects on the inside walls of the chromium tank cover and runs back into the solution. A semi-permeable membrane allows passage of the hydrogen and oxygen out of the chromium tank cover. A lit smoke device is placed inside the chromium tank cover to detect leaks at the membrane, joints, or seals.

2. Apparatus

2.1 **Smoke device.** Adequate to generate 500 to 1000 ft³ of smoke/20 ft² of tank surface area (e.g., Model #1A=15 SECONDS from Superior Signal, New York).

2.2 **Small container.** To hold the smoke device.

3. Procedure

Place the small container on a stable and flat area at center of the chromium tank cover (you can use a board and place it on the buss bars). Place the smoke device inside the container. After lighting the smoke device, quickly close the access door to avoid smoke from escaping. Let smoke device completely burn; entire space under the chromium tank cover will now be filled with the smoke. Observe for leaks of smoke from each seal, joint, and membrane of the chromium tank cover. Record these observations including the locations and a qualitative assessment of any leaks of smoke.

When all seals, joints, and membranes have been observed, evacuate the unit to remove the smoke from the chromium tank cover.

Appendix 6 – Approval of Alternatives for Specific Requirements

Section	Requirement	Description of Authority	Approving Agency	Concurring Agency ⁺
(a)	Applicability	Assisting an owner or operator in determining whether a facility is subject to the ATCM	District	
(c)	Standards	Approving alternative standards	District	U.S. EPA
(e)(1)	Performance Test Requirement	Waiving a performance test requirement	District	
(e)(2)	Use of Existing Performance Tests	Approving the use of existing performance test results to demonstrate compliance, based on the “Description of the Technical Review Protocol for Performance Tests of California Chrome Plating Sources” (see Attachment 2 of the July 10, 1998 memorandum from John S. Seitz entitled, “Delegation of 40 CFR Part 63 General Provisions Authorities to State and Local Air Pollution Control Agencies.”)	District	
(e)(3)	Test Method	Approving site-specific alternatives to test methods	District for minor ¹ or intermediate ² changes	U.S. EPA <u>for major³ changes,</u> <u>and ARB for major³ changes</u>
(e)(4)	Pre-Test Protocol	Approving pre-test protocols	District	
(e)(5)	Test All Emission Points	Waiving the requirement to test all emission points	District	
(g)	Parameter Monitoring	Approving site-specific changes in monitoring methodology	District for minor ¹ or intermediate ⁴ changes	U.S. EPA for major ³ changes ³
(h)	Inspection and Maintenance Requirements	Approving site-specific changes to inspection and maintenance requirements	District	
(i)	Operation and Maintenance Plans	Approving or requiring site-specific changes to operation and maintenance plans	District	

(j)(1)-(10)	Recordkeeping	Waiving or altering recordkeeping requirements	District	U.S. EPA for major³ changes
(j)(1 2 4)	Retention of Records	Waiving or altering the requirement to retain records for 5 years	District	U.S. EPA for major³ changes
(k)	Reporting	Waiving or altering reporting requirements	District	U.S. EPA ⁵ for major³ changes

- 1 Minor change to a test method or monitoring is a modification to a federally enforceable test method or monitoring that (a) does not decrease the stringency of the emission limitation or standard or the compliance and enforcement measures for the relevant standard; (b) has no national significance (e.g., does not affect implementation of the application regulation for other affected sources, does not set a national precedent, and individually does not result in a revision to the test method or monitoring requirement); and (c) is site specific, made to reflect or accommodate the operation characteristics, physical constraints, or safety concerns of an affected source.
- 2 Intermediate change to a test method is a within-method modification to a federally enforceable test method involving “proven technology” (generally accepted by the scientific community as equivalent or better) that is applied on a site-specific basis and that may have the potential to decrease the stringency of the associated emission limitation or standard. Intermediate changes are not approvable if they decrease the stringency of the standard.
- 3 Major change to a test method or monitoring is a modification to a federally enforceable test method or federally required monitoring that uses unproven technology or procedures or is an entirely new method (sometimes necessary when the required test method is unsuitable).
- 4 Intermediate change to monitoring is a modification to federally required monitoring involving “proven technology” (generally accepted by the scientific community as equivalent or better) that is applied on a site-specific basis and that may have the potential to decrease the stringency of the compliance and enforcement measures for the relevant standard.
- 5 U.S. EPA concurrence is not needed for adjustments made according to [subdivision-paragraph](#) (k)(6).

Appendix 7 – Distance-Adjusted Ampere-Hour and Annual Emissions Limits For Facilities Located More Than 25 Meters from a Residence or Sensitive Receptor.

Facilities subject to the [interim](#) requirements of paragraph (c)(9) or complying with the [interim](#) facility-wide mass emission rate in paragraph (d)(4) may adjust the ampere-hour or annual emission limits according to actual receptor distance. Ampere-hour limits refer to actual consumption of electrical current from all hexavalent chromium electroplating and chromic acid anodizing operations at a facility.

Use the following tables to determine the appropriate ampere-hours or annual emissions for compliance with the [interim](#) emission limitations in paragraph (c)(9), or compliance with the [interim](#) facility-wide mass emission rate in paragraph (d)(4) according to the distance to the nearest receptor. Receptor distance is measured as follows:

**Table 7-1
Measuring Receptor Distance**

Source Type	Measure From:	Measure To:
Point Source, Single Stack	Stack	Property Line of Nearest Receptor
Point Source, Multiple Stacks	Centroid of Stacks	Property Line of Nearest Receptor
Volume Source No Stack	Center of Building	Property Line of Nearest Receptor

Table 7-2
Hexavalent Chromium Electroplating and Chromic Acid Anodizing
Operation Vented to Air Pollution Control Device(s) Equipment Normally
Operating 12 Hours Per Day or Less

Distance to Nearest Receptor (m)	25	30	35	40	45	50	55	60
Ampere-Hours/yr (x10⁶)	1.60	1.74	1.88	2.03	2.22	2.44	2.69	2.98
Annual Emissions (lbs/yr)	0.036	0.039	0.042	0.045	0.049	0.054	0.060	0.066
Distance to Nearest Receptor (m)	65	70	75	80	85	90	95	100
Ampere-Hours/yr (x10⁶)	3.36	3.84	4.48	4.87	5.33	5.88	6.56	7.42
Annual Emissions (lbs/yr)	0.074	0.085	0.099	0.108	0.118	0.130	0.145	0.164

Table 7-3
Any Hexavalent Chromium Electroplating and Chromic Acid Anodizing
Operation Vented to Air Pollution Control Device(s) Equipment Normally
Operating More Than 12 Hours Per Day

Distance to Nearest Receptor (m)	25	30	35	40	45	50	55	60
Ampere-Hours/yr (x10⁶)	1.80	1.80	1.80	1.80	1.80	1.80	1.92	2.05
Annual Emissions (lbs/yr)	0.039	0.039	0.039	0.039	0.039	0.039	0.042	0.044
Distance to Nearest Receptor (m)	65	70	75	80	85	90	95	100
Ampere-Hours/yr (x10⁶)	2.20	2.38	2.58	2.74	2.92	3.12	3.35	3.62
Annual Emissions (lbs/yr)	0.048	0.051	0.056	0.059	0.063	0.068	0.073	0.078

Table 7-4
Decorative Chromium Electroplating and Chromic Acid Anodizing
Operations Without Air Pollution Control

Distance to Nearest Receptor (m)	25	30	35	40	45	50	55	60
Ampere-Hours/yr (x10⁶)	1.15	1.31	1.52	1.80	2.22	2.89	3.19	3.56
Annual Emissions (lbs/yr)	0.025	0.028	0.033	0.039	0.048	0.063	0.069	0.077
Distance to Nearest Receptor (m)	65	70	75	80	85	90	95	100
Ampere-Hours/yr (x10⁶)	4.03	4.64	5.47	5.92	6.46	7.10	7.88	8.87
Annual Emissions (lbs/yr)	0.088	0.101	0.119	0.129	0.140	0.154	0.171	0.193

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

The owner or operator of a facility applying for approval of an alternative method of compliance must submit to the District the following information.

1. A performance test as specified in subdivision (e). The test shall have been conducted in a manner consistent with normal electroplating or anodizing operations.
2. A demonstration that the alternative method achieves an equal or greater amount of reductions in hexavalent chromium emissions than would be achieved with direct compliance with the applicable emission rate in (c)(11)(A), (c)(12)(A)(ii), or (c)(13)(A)(iv).
3. Calculations based on scientifically valid risk assessment methodologies demonstrating that the alternative method results in reducing risk equally or greater than the risk reduction that would be achieved by direct compliance with the applicable emission rate in Table 2 of subparagraph (c)(11)(A), (c)(12)(A)(ii), or (c)(13)(A)(iv). A facility using in-tank controls shall only be modeled as a volume source and the resulting risk compared to the same facility modeled as a point source.
4. Documentation which demonstrates that the method is enforceable, including an operation and maintenance plan, an inspection and maintenance schedule, and a recordkeeping plan.

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

1. Applicability and Principle

1.1 Applicability. This method is applicable to all hard and decorative chromium electroplating and chromic acid anodizing operations where an add-on air pollution control device is used to reduce chromium emissions from the chromium electroplating or anodizing tank.

1.2 Principle. During chromium electroplating or anodizing operations, bubbles of hydrogen and oxygen gas generated during the process rise to the surface of the tank liquid and burst. Upon bursting, tiny droplets of chromic acid (chromium mist) become entrained in the air above the tank. Collection of this chromium mist is achieved by the ventilation system associated with the add-on air pollution control device for the tank(s) where chromium emissions are reduced downstream. Emission control efficiency at the exhaust of an add-on control device is related to capture efficiency at the inlet of the ventilation system. For this reason, it is imperative that 100% capture efficiency is maintained. A smoke device placed within the area where collection of chromic mist by the ventilation system occurs reveals this capture efficiency.

2. Apparatus

2.1 Smoke Generator. Adequate to produce a persistent stream of visible smoke (e.g., Model #15-049 Tel-Tru™ T-T Smoke Sticks from E. Vernon Hill, Incorporated).

3. Testing Conditions

The smoke test shall be conducted while the add-on air pollution control device is in normal operation and under typical draft conditions representative of the facility's chromium electroplating and/or chromic acid anodizing operations. This includes cooling fans and openings affecting draft conditions around the tank area including, but not limited to, vents, windows, doorways, bay doors, and roll-ups. The smoke generator must be at full generation during the entire test and operated according to manufacturer's suggested use.

3. Procedure

The smoke test shall be conducted over a minimum twelve point matrix evenly distributed over the entire liquid surface of each chromium electroplating or chromic acid anodizing tank vented to the add-on air pollution control device. Place the aperture of the smoke device at each point of the matrix at a height within

one inch above the tank top. Observe collection of the smoke to the collection location(s) of the ventilation system. An acceptable smoke test shall demonstrate a direct stream to the collection location(s) of the ventilation system without meanderings out of this direct path. Record these observations at each of the points on the matrix providing a qualitative assessment of the collection of smoke to the ventilation system. The test shall also be documented by photographs or video at each point of the matrix.

Appendix 10 – Surface Tension Measurement Procedure for a Stalagmometer

The stalagmometer shall first be properly cleaned before being used for the first time and after a period of storage. Properly clean the stalagmometer using the following procedure:

1. Set up stalagmometer in stand in a fume hood.
2. Place a clean 150 mL beaker underneath the stalagmometer then fill with reagent grade concentrated nitric acid. Immerse bottom tip (approximately ½”) of stalagmometer into the beaker.
3. Squeeze rubber bulb and pinch at the arrow up (1) position to collapse. Place bulb end securely on top end of stalagmometer. Carefully draw the nitric acid by pinching the arrow up (1) position until the level is above the top etched line.
4. Allow nitric acid to remain in stalagmometer for 5 minutes and then carefully remove the bulb allowing the acid to completely drain.
5. Fill a clean 150 mL beaker with distilled or deionized water. Using the rubber bulb per the instructions in Step #3, rinse and drain stalagmometer with deionized or distilled water until the inside is “water break” free.
6. Fill a clean 150 mL beaker with isopropyl alcohol. Again using the rubber bulb per Step #3, rinse and drain stalagmometer twice with isopropyl alcohol and allow the stalagmometer to dry completely.
7. Take a sample of the solution to be tested and adjust the solution to room temperature. Measure the specific gravity and record reading.
8. Fill a clean 150 mL beaker with solution to be tested. Immerse bottom end of stalagmometer into the beaker. Fill the stalagmometer per instructions in Step #3, making sure that the solution level is above the top etched line.
9. Raise the stalagmometer so that the bottom end is completely out of solution. Remove bulb and immediately place a finger on the top end of the stalagmometer. Carefully use the finger to bring the solution level down to the top etched line. Do not release finger at this time.
10. “Wipe” the excess solution on the lower tip by touching it against the side of the beaker.
11. Release fingertip to allow solution to drain and count number of drops until the level reaches the bottom etched line.

Calculations for Surface Tension

$$\text{Surface tension (dynes/cm)} = \frac{S_w * N_w * D}{N * D_w}$$

S_w = Surface tension of water at 25°C or 77°F (72.75 dynes/cm)

N_w = water drop number etched on instrument

D = measured specific gravity (g/ml)

N = # of solution drops

D_w = water density (1.0 g/mL)

PRECAUTIONS:

1. Make sure the stalagmometer is clean (no sludge or film)
2. No chips, cracks, etc
3. Vertical placement
4. No vibration
5. 20 drops per minute rate (10 dynes/cm) +/- 1 drop per minute
6. Performance checked with water. The number of drops etched on the instrument shall be verified with deionized water to +/- 1 drop. If the number of drops are not within 1 drop, then the stalagmometer shall be cleaned. If the cleaning process does not bring the drop count within 1 drop of the etched number on the instrument, then the operator shall:
 - a) Purchase a new stalagmometer; or
 - b) Use the number of drops recorded for the distilled water run as (N_w) in the equation instead of the number of drops etched on the stalagmometer.
7. Sample at room temperature.