Air Pollution Control Division
Small Business Assistance Program

Inspector Checklists
For Chromium electroplating and Anodizing

Chromium Electroplating and Chromium Anodizing
Regulation Number 8, Part E
Incorporating by Reference:
40 C.F.R. Part 63, Subpart N

Developed by:
Small Business Assistance Program
Stationary Sources Program
Air Pollution Control Division
Colorado Department of Public Health and Environment
(303) 692-3175 or 3148

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INSPECTOR CHECKLIST, PRIOR TO INSPECTION

Applicable regulation: Chromium NESHAP at 40 C.F.R. Part 60, Subpart N.

There are several types of chromium electroplating and anodizing tanks. It is important for an Inspector to know which type of tank(s) s/he will be inspecting at the facility. Therefore, the Inspector should answer the following questions prior to the inspection of any chromium electroplating or anodizing tank(s). The answers will determine which type of tank(s) will be at the facility and which inspection checklist(s) must be reviewed prior to the inspection and brought to use during the inspection.

1.0 Based on Division records and the table below, determine the number of chromium electroplating and anodizing tanks operating at the facility. If the necessary information is not available from Division records, the Inspector should contact the owner or operator of the source prior to the inspection and request information to determine the function(s) and process parameters of each tank.

_____ Hard chromium electroplating
_____ Decorative chromium electroplating
_____ Chromium anodizing

Type of Operation	Functions	Process Parameters
Hard chromium electroplating	Provides a surface with functional properties such as wear resistance, low coefficient of friction, hardness, and corrosion resistance	Federal specifications: Plate thickness 1.3 to 760 microns Current density 150 to 600 A/ft^2 Plating time 20 minutes to 36 hours Other parameters: Chromic acid concentration 30 to 50 oz/gal Sulfuric acid concentration 0.3 to 0.5 oz/gal Solution temperature 120 to 150 °F
Decorative chromium electroplating	Provides a bright surface with wear and tarnish resistance	Federal specifications: Plate thickness 0.003 to 2.5 microns (chromic acid bath) or 0.13 to 25 microns (trivalent chromium bath) Current density 50 to 220 A/ft^2 Plating time 0.5 to 5 minutes Other parameters: Chromic acid concentration 30 to 50 oz/gal Sulfuric acid concentration 0.3 to 0.5 oz/gal Solution temperature 100 to 115 °F
Chromium anodizing	Provides corrosion resistance or electrical insulation	Federal specifications: Chromic acid concentrations of 6.67 to 13.3 oz/gal Other parameters: Film thickness 0.02 to 0.05 microns Current density 144 to 720 A/ft^2 Anodizing time 30 to 60 minutes Solution temperature 90 to 95 °F pH 0.5 to 0.85 Voltage 20 to 40 volts

2.0 If a facility's operations do not fall exactly within the function(s) and parameters of one of the types of chromium electroplating or anodizing sources, the Inspector must determine which type the operation should be considered. To make such a determination, the Inspector can consider the purpose for which the chrome is being applied, whether a hexavalent or trivalent solution is used, plate thickness, plating time, plate density, chromic acid concentrations, whether sulfuric acid is used, and temperature of the solution. The Inspector and the Division should determine together whether the source is a hard chromium electroplating, decorative chromium electroplating, or chromium anodizing source.

3.0 If a tank fits within the function(s) and parameters of one of the types of chromium electroplating or anodizing sources, the Inspector must then determine whether the source may be exempt. The source is exempt if it is a:

_____ Research or laboratory operation:
  _____ primary purpose of research and development of new processes and products
  _____ operations must be conducted under close supervision of technically trained personnel
  _____ operation cannot be involved manufacture products for commercial sale, except in a de minimis/minor manner
_____ Process tanks in which neither chromium electroplating nor chromium anodizing occurs (i.e. rinse, etching, cleaning)
_____ Process tanks that contain a chromium solution but in which no electrolytic process occurs (i.e. chrome conversion coating tank where no electrical current is applied)

After determining which type(s) of tank(s) will be at the facility, review the Inspector's Guidance Manual for Inspecting: Chromium Electroplating and Anodizing Tanks and make a copy of the Inspector On-Site Checklist for each type of tank at the facility.

INSPECTOR CHECKLIST, CHROMIUM ANODIZING

Applicable regulation: Chromium NESHAP at 40 C.F.R. Part 60, Subpart N.

The Inspector must complete one checklist for each source or tank inspected.

Tank Number: _____
Date Inspected: _____

1.0 Compliance Date: the date by which a source must comply with the Chromium NESHAP depends on whether the source is existing or new/reconstructed.

	Compliance Date
Existing	September 19, 2014
New/reconstruction with initial startup after September 19, 2012	Immediately upon startup
Existing area source that becomes major	Immediately
New area source (after February 8, 2012) that becomes major	Immediately
Small facility that becomes large	Within 1 year of becoming major

This source had an initial startup date of _____
This is a (existing, new, reconstructed) source _____
This source must be in compliance as of _____
This source was in compliance on _____ OR
This source is not in compliance because _____
_____

2.0 Facility is a Major or Area source: the owner or operator must have records which enable the Inspector to determine a source's potential to emit chromium.

_____ Major source if has the potential to emit ten tons per year of any one hazardous air pollutant (HAP) or twenty five tons per year of any combination of HAPs
_____ Area source if not a major source
_____ Major source if an area source increases the potential to emit above ten tons per year of any one HAP or twenty five tons per year of any combination of HAPs

3.0 Type of Air Pollution Control Device: the owner or operator should have documentation available on the control device(s) utilized and should demonstrate that the device(s) is functioning properly.

Add-on air pollution control devices:

_____ Composite mesh-pad system (CMP)
_____ Packed bed scrubber (PBS)
_____ CMP/PBS system
_____ Fiber-bed mist eliminator
_____ Other _____ (need Division or EPA approved documentation)

Chemical fume suppressant air pollution control devices:
_____ Foam blanket
_____ Wetting agent
_____ Other _____ (need Division or EPA approved documentation)

If using both an add-on and fume suppressant air pollution control device:
Type of add-on devices(s): _____
_____
Type of fume suppressant(s): _____
_____

4.0 Number of Tanks Attached to the Same Air Pollution Control Device:

_____ Single tank attached to one control device
_____ Multiple tanks attached to one control device
  _____ Same operation performed at each tank
  _____ Same emission limit for each tank
  _____ Control device controls sources that are not chromium electroplating or anodizing tanks

5.0 Emission Limits: using the information from sections 1.0 and 4.0, answer:

The emission limit for this source, as determined by Tables 1 and 2 (pages 14 and 15) is
_____

Describe whether the source met the emission limits by the required compliance date
_____

If the source failed to meet the required emission limits by the compliance date, explain why
_____
_____

6.0 Operation and Maintenance (O&M) Plan:

_____ O&M plan is kept on record and available upon inspection, for the life of the affected source or until the source is no longer subject to the Chromium NESHAP

_____ The owner or operator, upon revision of the O&M plan, kept previous versions for a period of five years after each revision
_____ O&M plan is incorporated by reference into the facility's operating permit

O&M plan for this facility (yes/no):
_____ specifies the operating and maintenance criteria for the affected source
_____ specifies the housekeeping procedures (Table 4, page 19)
_____ specifies the add-on air pollution control device, if used to comply with the emission requirements
_____ specifies the process and control system monitoring equipment
_____ includes a standardized checklist to document the operation and maintenance of the air pollution control device(s) and process and control system monitoring equipment
_____ specifies procedures to be followed to ensure that equipment or process malfunctions due to poor maintenance or other preventable conditions do not occur
_____ includes a systematic procedure for identifying malfunctions of process equipment, add-on air pollution control devices, and process and control system monitoring equipment and for implementing corrective actions to address such malfunctions

If the facility utilizes any add-on air pollution control devices:
_____ the O&M plan incorporates operation and maintenance practices for any add-on air pollution control device or monitoring equipment identified in Table 3 (page 17)

List the applicable operation and maintenance practices for the add-on air pollution control device(s) uses and whether the operator has complied:

Add-on Air Pollution Control Device	Operation and Maintenance Practice	Compliance (yes/no)
1.	a. b. c. d.	a. b. c. d.
2.	a. b. c. d.	a. b. c. d.
3.	a. b. c. d.	a. b. c. d.

_____ if the specific equipment used is not identified in Table 3, the O&M plan shall incorporate proposed operation and maintenance practices which must be submitted to the Division and the EPA

The owner or operator operates and maintains all of the following in a manner consistent with "good air pollution control practices," including quarterly inspections (yes/no):
_____ affected sources and ductwork of the sources
_____ associated control devices
_____ monitoring equipment

The following documentation was provided to establish whether the owner or operator properly maintained the source in a manner consistent with "good air pollution control practices" (yes/no):
_____ monitoring results
_____ review of the O&M plan, procedures, and records
_____ inspection of the source
_____ other _____

O&M plan does not meet the requirements, revisions must be made:
_____ does not address a malfunction that has occurred
_____ fails to provide for the operation of the affected source, the air pollution control technique, or the control system and process monitoring equipment during a malfunction in a manner consistent with "good air pollution control practices"
_____ does not provide adequate procedures for correcting malfunctions

Has a malfunction occurred? _____

Did the O&M plan fail to or inadequately address the malfunction? _____
If yes, explain _____

If the O&M plan failed to or inadequately addressed the malfunction, did the owner or operator revise the O&M plan within forty five days after the event?
___
If no, explain _____
If yes, does the revised O&M plan include:
_____ procedures for operating and maintaining the process equipment, add-on air pollution control device, or monitoring equipment during similar malfunctions
_____ a program for corrective actions for such events

Did the owner or operator take actions inconsistent with the procedures specified in the O&M plan during periods of malfunction?
_____
If yes, did the operator:

_____ record the actions taken for the event and report by phone such actions within two working days after actions were taken
_____ send a letter within seven working days after the end of the event
_____ provide the Inspector with copies of such reports and records

7.0 Initial Performance Test:

If the tank meets the following description, it is exempt from the initial performance test:
_____ decorative chromium anodizing tank using a trivalent chromium bath that incorporates a wetting agent as a bath ingredient

For non-exempt tanks, the owner or operator must have performed an initial performance test within 180 days of the source's compliance date.

If no initial performance test was performed, explain
_____
_____

_____ Initial performance test was submitted to the Division
If no, explain _____
_____

_____ Initial performance test was reviewed by the Division on _____
If no, explain _____
_____

_____ The Division provided a final determination to the source (and the County) whether the source was in compliance

Indicate the parameters obtained in the initial performance test to determine whether the source is in ongoing compliance.

Air Pollution Control Technique	Parameter Obtained in the Initial Test	Revised Chromium NESHAP Parameters
Composite mesh-pad	Pressure drop across system: _____ in. w.c. ± 1 in.	± 2 in.
Packed bed scrubber	Pressure drop across system: _____ in. w.c. ± 1 in. & Velocity pressure at system inlet: _____ ± 10% ave. vel.	
Fiber-bed mist eliminator	Pressure drop across upstream control device that prevents plugging: _____ in. w.c. ± 1 in.	
Wetting agent	Surface tension at the bath: _____ dynes/cm	40 dynes/cm by stalagmometer, 33 by tensiometer
Foam blanket	Foam blanket thickness: _____ in. or cm	

8.0 Ongoing Compliance Monitoring: the Inspector should determine the type(s) of air pollution control technique(s) and whether the owner or operator has met the applicable ongoing compliance monitoring requirement.

Operator uses an add-on air pollution control device and measures:

Air Pollution Control Device	Yes/No	Monitored Parameter	Monitoring Frequency
Composite mesh-pad (CMP)	_____	Monitor pressure drop across system	Daily
Packed bed scrubber (PBS)	_____ _____	Monitor pressure drop across system & Monitor velocity pressure at system inlet	Daily Daily
CMP/PBS	_____ _____	Monitor pressure drop across the CMP & Monitor the velocity pressure at system inlet	Daily Daily
Fiber-bed mist eliminator	_____	Monitor pressure drop across the upstream control device that prevents plugging	Daily
Other	_____ _____ _____	Operator has determined the appropriate parameter: _____ The Division has approved the parameter The Operator has measured the parameter	Appropriate monitoring frequency: _____

The Inspector has personally seen the owner or operator measures, if required:
_____ pressure drop across CMP system
_____ pressure drop across PBS system
_____ pressure drop across the FMBE system
_____ velocity pressure at the system inlet
_____ other _____

If the pressure drop must be measured, did the monitored value(s) (yes/no):
_____ fall within the range established during the initial performance test
_____ fall within ± 2 inches above the average water column measured during three performance tests
If yes to either, the source is in compliance.

If velocity pressure must be measured, did the monitored value(s) (yes/no):
_____ fall within the range established during the initial performance test
_____ fall within ± 10 percent above the average velocity pressure measured during three performance tests
If yes to either, the source is in compliance.

Operator uses a chemical fume suppressant air pollution control technique and takes the following measurements:

Air Pollution Control Device	Yes/No	Monitored Parameter	Monitoring Frequency

Wetting agent	_____	Measure the surface tension at the bath	Daily or _____
Foam blanket	_____	Monitor foam blanket thickness	4 hours[a,b] or _____
Combination wetting agent and foam blanket	_____	Measure the surface tension at the bath	Daily or _____
Chemical fume suppressant and add-on control device	_____ _____	Measure the surface tension at the bath & Monitor foam blanket thickness	Daily or _____ Hourly[b,c] or _____
Other	_____ _____ _____	Operator has determined the appropriate parameter: _____ The Division has approved the parameter The Operator has measured the parameter	Appropriate monitoring frequency: _____

[a] If there are no exceedance of the maximum surface tension after forty hours of operation, then the monitoring frequency can be decreased to once every eight hours. If there are no exceedances for the next forty hours, then the frequency can be decreased to once every forty hours. If an exceedance occurs, the initial monitoring schedule must be resumed.

[b] The initial schedule must be resumed for every new tank solution.

[c] If there are no exceedances of the minimum foam blanket thickness after forty hours of operation, then the monitoring frequency can be decreased to once every four hours. If there are no exceedances for the next forty hours of operation, then the frequency can be decreases to once every eight hours. If an exceedance occurs, the initial monitoring schedule must be resumed.

Inspector has personally seen the owner or operator properly take the following measurements, if required:

_____ surface tension and/or
_____ foam blanket thickness

_____ Did the surface tension exceed the maximum surface tension established by the owner or operator for pressure drop?

If no, the source is in compliance.

_____ Did the foam blanket thickness fall below the minimum foam blanket thickness or fall below 1 inch (2.54 cm) in thickness?

If no, the source is in compliance.

If the facility has multiple tanks and meets one of the following conditions, go to Table 2 (page 13) to obtain equations used to verify compliance with the emissions limits:

_____ the multiple tanks include a chromium electroplating or chromium anodizing tank among other tanks not affected by the regulation, or
_____ the multiple tanks include chromium tanks performing different operations subject to different emissions limits, which may or may not be controlled with nonaffected sources, or
_____ the multiple tanks include chromium anodizing tanks subject to different emissions limits, which may or may not be controlled with nonaffected sources.

9.0 Recordkeeping: the owner or operator must keep the following records for at least five years to demonstrate compliance.

Inspection and maintenance records
_____ work practices conducted on schedule
_____ maintenance performed on process, control system(s), and monitoring equipment

Malfunction records
_____ correction of malfunction consistent with the O&M plan no records required
_____ correction of malfunction not consistent with O&M plan following records required: occurrence, duration, and cause of any malfunction of the process, air pollution control device, and monitoring equipment

Performance test records
_____ performance test results including process and air pollution control parameter measurements used during testing and any additional measurements

Monitoring data records, include at a minimum
_____ identify control system(s)
_____ identify the monitored parameter(s)
_____ identify the value of the monitored parameter(s)
_____ identify the time and date when the parameter(s) was monitored

Excess emission records
_____ excess emission records must include at a minimum the start and end times and dates of each period of excess emissions
_____ excess caused by malfunction operator records: type of malfunction, duration of malfunction, cause of malfunction, corrective actions, and date and time of malfunction
_____ excess emission caused by something other than malfunction

Process records, include at a minimum
_____ process operating time for each tank
_____ time and date of each addition of fume suppressant, if using

Miscellaneous records
_____ other records required by permit or notice of violation
_____ documentation supporting the requirements of a waiver, if granted

10.0 Reporting:

Type of Source	Relevant Dates	Yes/No	Requirements
Existing	Initial startup before 1/25/1995	_____	Initial notification on or before 7/24/1995
New or reconstructed	Initial startup after 1/25/1995, constructed or reconstructed before 1/25/1995	_____ _____	Notification of date of construction or reconstruction Notification of actual startup within 30 days
New or reconstructed	Initial startup after 1/25/1995, constructed or reconstructed after 1/25/1995	_____ _____	Notification of date of construction or reconstruction within 30 days Notification of actual startup within 30 days

_____ Notification of construction or reconstruction of the facility, if begun after January 25, 1995

_____ Notification of initial performance testing at least 60 calendar days prior the scheduled date of the test

A site specific test plan prior to the initial performance test that includes:
_____ description of the process to be tested
_____ conditions under which testing is to be conducted
_____ sampling location description
_____ test method to be used

_____ A performance test report, including
_____ description of the process to be tested
_____ sampling location descriptions
_____ sampling and analysis procedures and any modifications to the standard procedures
_____ description of the internal and external quality assurance program
_____ records of operating conditions during testing, preparation of the standards, and calibration procedures
_____ raw data sheets for field sampling and field and laboratory analyses
_____ documentation of calculations
_____ any additional information required by the test method
_____ internal quality assurance program, including activities planned by routine operators and analysts to provide assessment of test data precision
If no, explain _____

A report of the following was sent within 90 days after the performance test and no later than 30 days after the compliance date
_____ performance test results

_____ compliance status
_____ copy of performance test report

A compliance status report that included
_____ applicable emission limitation and methods used to determine compliance
_____ if performance test is required, the test report documenting the results
_____ type and quantity of hazardous air pollutants emitted
_____ specific operating parameter value, or range, for each monitored parameter
_____ methods that will be used to determine continuous compliance
_____ description of the air pollution control technique for each emission point
_____ statement that the operator has the O&M plan completed and on file
_____ statement by the operator as to whether the tank is in compliance

An ongoing compliance status report, based on
_____ a major source: prepare and submit a report to the Division every six months unless the Division decides more frequent reports are required
_____ a major source that experienced exceedances: report to the Division every three months
_____ an area source: report to the Division annually
_____ an area source that experienced exceedances $\geq$ 1% of total operating time for the reporting period and total duration of malfunctions is $\geq$ 5% of the total operating time: report to the Division every six months

Table 1
Emission Limits for Chromium Electroplating Tanks – Single Source/Tank

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

Table 2
Emission Limits for Chromium Electroplating Tanks – Multiple Sources/Tanks

Group of tanks with any one tank operating	Common add-on air pollution control device	Each tank performs same type of operation	Each tank subject to the same emission limits	Control device controls nonaffected tanks	Required emission limits
Hard chromium, Decorative chromium, Chromium anodizing	Yes	Yes	Yes	No	63.342(c), (d), or (e) [a]
Hard chromium, Decorative chromium, Chromium anodizing	Yes	Yes	Yes	Yes	63.344(e)(3) [b]
Hard chromium, Decorative chromium, Chromium anodizing	Yes	No	Yes	Yes or no	63.344(e)(4) [c]
Hard chromium, Decorative chromium, Chromium anodizing	Yes	Yes	No	Yes or no	63.344(e)(4) [c]

[a] 63.342(c) standards for open or enclosed surface hard chromium electroplating tanks, (d) standards for decorative chromium electroplating tanks using a chromic acid bath and chromium anodizing tanks, (e) standards for decorative chromium electroplating tanks using a trivalent chromium bath (see Table 1.1)

[b] Special compliance provisions for multiple sources, performing the same type of operation, subject to the same emission limits, and controlled by a common add-on air pollution control device (also controlling emissions from sources not affected by these standards):

(i) Calculate the cross-sectional area of each inlet duct, including those not affected by the standard

(ii) Determine the total sample time per test run by dividing the total inlet area from all tanks connected to the control system by the total inlet area for all ducts associated with the

affected source, then multiple this number by two hours; this calculated time is the minimum sample time required per test run

(iii) Perform Method 306 or 306A testing and calculate an outlet mass emission rate

(iv) Determine the total ventilation rate from the affected sources by using equation:

$$VR_{tot} \times IDA_i / \Sigma IA_{total} = VR_{inlet}$$

where VR_{tot} is the average total ventilation rate in dscm/min for the three test runs as determined at the outlet by mass of the Method 306 or 306A testing; IDA_i is the total inlet duct area for all ducts associated with affected sources; ΣIA_{total} is the sum of all inlet duct areas from both affected and nonaffected sources; and VR_{inlet} is the total ventilation rate from all inlet ducts associated with affected sources.

(v) Establish the allowable mass emission rate of the system (AMR_{sys}) in milligrams of total chromium per hour (mg/hr) using equation:

$$\Sigma VR_{inlet} \times EL \times 60 \text{ minutes/hour} = AMR_{sys}$$

where ΣVR_{inlet} is the total ventilation rate in dscm/min from the affected sources and EL is the applicable emission limitation from 40 C.F.R. 63.342 in mg/dscm. The allowable mass emission rate (AMR_{sys}) calculated should be equal to or more than the outlet three-run average mass emission rate determined from Method 306 or 306A testing in order for the source to be in compliance with the standard.

[c] Special compliance provisions for multiple sources, performing different types of operations, and controlled by a common add-on air pollution control device (that may or may not also be controlling emissions from sources not affected by these standards) OR multiple sources, performing same types of operations, subject to different emission limits, and controlled by a common add-on air pollution control device:

(i) Calculate the cross-sectional area of each inlet duct, including those not affected by the standard

(ii) Determine the total sample time per test run by dividing the total inlet area from all tanks connected to the control system by the total inlet area for all ducts associated with the affected source, then multiple this number by two hours; this calculated time is the minimum sample time required per test run

(iii) Perform Method 306 or 306A testing and calculate an outlet mass emission rate

(iv) Determine the total ventilation rate from the affected sources by using equation:

$$VR_{tot} \times IDA_i / \Sigma IA_{total} = VR_{inlet,a}$$

where VR_{tot} is the average total ventilation rate in dscm/min for the three test runs as determined at the outlet by mass of the Method 306 or 306A testing; IDA_i is the total inlet duct area for all ducts conveying chromic acid from each type of affected source performing the same operation, or each type of affected source subject to the same emission limitation; ΣIA_{total} is the sum of all inlet duct areas from both affected and nonaffected sources; and $VR_{inlet,a}$ is the total ventilation rate from all inlet ducts conveying chromic acid from each type of affected source performing the same operation, or each type of affected source subject to the same emission limitation.

(v) Establish the allowable mass emission rate in mg/hr for each type of affected source that is controlled by the add-on air pollution control device using the appropriate equation:

$$VR_{hc1} \times EL_{hc1} \times 60 \text{ minutes/hour} = AMR_{hc1}$$
$$VR_{hc2} \times EL_{hc2} \times 60 \text{ minutes/hour} = AMR_{hc2}$$
$$VR_{dc} \times EL_{dc} \times 60 \text{ minutes/hour} = AMR_{dc}$$
$$VR_{ca} \times EL_{ca} \times 60 \text{ minutes/hour} = AMR_{ca}$$

where hc applies to the total centilation rates for all hard chromium electroplating tanks subject to the same emission limitation; dc applies to the total of ventilation rates for the decorative chromium electroplating tanks; ca applies to the tltal of ventilation rates for the chromium anodizing tanks; and EL is the applicable emission limitation from 40 C.F.R. 63.342 in mg/dscm. There are two equations for hard chromium electroplating tanks because different emission limitations may apply (e.g., a new tank versus an existing, small tank).

(vi) Establish the allowable mass emission rate (AMR_{sys}) in mg/hr for the system using the equation 8, including each type of affected source as appropriate:

$$AMR_{hc1} + AMR_{hc2} + AMR_{dc} + AMR_{ca} = AMR_{sys}$$

The allowable mass emission rate calculated from this equation should be equal to or more than the outlet three-run average mass emission rate determined from Method 306 or 306A testing in order for the source to be in compliance with the standards.

Table 3
Summary of Operation and Maintenance Practices

Control Device	Work Practice Standards	Time Required
Composite Mesh Pad System	1. Visually inspect device to ensure there is proper drainage, no chromic acid buildup on the pads, and no evidence of chemical attack on the structural integrity of the device. 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.	1. 1/quarter 2. 1/quarter 3. 1/quarter 4. Per manufacturer
Packed Bed Scrubber System	1. Visually inspect device to ensure there is proper drainage, no chromic acid buildup on the backed beds, and no evidence of chemical attack on 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. Visually inspect ductwork from tank to the control device to ensure there are no leaks. 4. Add fresh makeup water to the top of the packed bed. [a,b]	1. 1/quarter 5. 1/quarter 6. 1/quarter 7. Whenever makeup is added
CMP/PBS System	Same as for CMP system	Same as for CMP system
Fiber-Bed Mist Eliminator[c]	1. Visually inspect fiber-bed unit and prefiltered device to ensure there is proper drainage, no chromic acid buildup, and no evidence of chemical attack on the structural integrity. 2. Visually inspect ductwork from tank or tanks to the control device to ensure there are no leaks.	1. 1/quarter 2. 1/quarter 3. 1/quarter 4. Per manufact

	3. Perform washdown of fiber elements in accordance with the manufacturer's recommendations.	urer
Other devices	To be proposed by the source for approval by the EPA.	To be proposed by the source
Monitoring Equipment		
Pilot Tube	Backflush with water, or remove from duct and rinse with fresh water. Replace and rotate 180 ° to the ensure same zero reading. Check pilot tube ends for damage, replace if cracked or fatigued.	1/quarter
Stalagmometer	Follow manufacturer's recommendations.	

[a] If greater than 50 percent of the scrubber water is drained (e.g., for maintenance purposes), makeup water may be added to the scrubber basin.

[b] For horizontal-flow scrubbers, top is defined as the section of the unit directly above the packaging media such that the makeup water would flow perpendicular to the air flow through the packing. For vertical-flow units, the top is defined as the area downstream of the packing material such that the makeup water would flow countercurrent to the air flow through the unit.

[c] Work practice standards for the control device installed upstream of the fiber-bed mist eliminator to prevent plugging do not apply as long as the work practice standards for the fiber-bed unit are followed.

Table 4
Housekeeping Practices

For	You must:	At this minimum frequency
1. Any substance used in an affected chromium electroplating or chromium anodizing tank that contains hexavalent chromium.	a. Store the substance in a closed container in an enclosed storage area or building; and b. Use a closed container when transporting the substance from the enclosed storage area.	a. At all times, except when transferring the substance to and from the container. b. Whenever transporting the substance, except when transferring the substance to and from the container.
2. Each affected tank, to minimize spills of bath solution that result from dragout. Note: this measure does not require the return of contaminated bath solution to the tank. This requirement applies only as the parts are removed from the tank. Once away from the tank area, any spilled solution must be handled as in item 4.	a. Install drip trays that collect and return to the tank any bath solution that drips or drains from parts as the parts are removed from the tank; or b. Contain and return to the tank any bath solution that drains or drips from parts as the parts are removed; or c. Collect and treat in an onsite wastewater treatment plant any bath solution that drains or drips from parts as the parts are removed.	a. Prior to operating the tank. b. Whenever removing parts from an affected tank. c. Whenever removing parts from an affected tank.
3. Each spraying operation for removing excess chromic acid from parts removed from, and occurring over, an affected tank.	Install a splash guard to minimize overspray during spraying operations and ensure that any hexavalent chromium laden liquid captured by the splash guard is returned to the electroplating or anodizing tank.	Prior to any such spraying operation.
4. Each operation that involves the handling or	Begin cleanup, or otherwise contain, all spills of the substance. Note: substances	Within 1 hour of the spill.

use of any substance used in an affected chromium electroplating or chromium anodizing tank that contains hexavalent chromium.	that fall or flow into drip trays, pans, sumps, or other containment areas are not considered spills.	
5. Surfaces within the enclosed storage area, open floor area, walkways around affected tanks contaminated with haxavalent chromium from an affected chromium electroplating or chromium anodizing tank.	a. Clean the surfaces using one or more of the following: HEPA vacuuming; hand-wiping with a damp cloth; wet mopping; hose down or rise with potable water that is collected in a wastewater collection system; other cleaning method approved by the permitting authority; or b. Apply a non-toxic chemical dust suppressant to the surfaces.	a. At least once every 7 days if one or more electroplating or anodizing tanks were used, or at least after every 40 hours of operation of one or more affected electroplating or anodizing tanks, whichever is later. b. According to manufacturer's recommendations.
6. All buffing, grinding, or polishing operations located in the same room as electroplating or anodizing operations.	Separate the operation from any affected electroplating or anodizing operation by installing a physical barrier; the barrier may take the form of plastic strip curtains.	Prior to beginning the buffing, grinding, or polishing operation.
7. All chromium or chromium-containing wastes generated from housekeeping activities.	Store, dispose, recover, or recycle the wastes using practices that do not lead to fugitive dust and in accordance with hazardous waste requirements.	At all time.

INSPECTOR CHECKLIST, DECORATIVE CHROMIUM ELECTROPLATING

Applicable regulation: Chromium NESHAP at 40 C.F.R. Part 60, Subpart N.

The Inspector must complete one checklist for each source or tank inspected.

Tank Number: _____
Date Inspected: _____

1.0 Compliance Date: the date by which a source must comply with the Chromium NESHAP depends on whether the source is existing or new/reconstructed.

	Compliance Date
Existing	September 19, 2014
New/reconstruction with initial startup after September 19, 2012	Immediately upon startup
Existing area source that becomes major	Immediately
New area source (after February 8, 2012) that becomes major	Immediately
Small facility that becomes large	Within 1 year of becoming major

This source had an initial startup date of _____
This is a (existing, new, reconstructed) source _____
This source must be in compliance as of _____
This source was in compliance on _____ OR
This source is not in compliance because _____
_____

2.0 Size of Facility: the owner or operator must demonstrate whether it is a large or small facility using one of the following methods. The Inspector may request any records necessary to verify the size of the facility such as tank manufacturer's descriptive documentation, calculation sheets, or operating records.

Capacity of the facility _____ million amp-hr/yr
(total rectifier capacity of all tanks x 8400 x 0.7 = ampere hours/year)

_____ large: maximum cumulative rectifier capacity of all the hard chromium electroplating tanks within the facility is equal to or greater than sixty million amp-hr/yr

_____ small: maximum cumulative rectifier capacity of all the hard chromium electroplating tanks within the facility is less than sixty million amp-hr/yr

_____ size determined by actual cumulative rectifier capacity for the previous twelve month rolling period (see Inspector's Guidance Manual Section 3.3.3 for determining size based on actual cumulative rectifier capacity)

3.0 Facility is a Major or Area source: the owner or operator must have records which enable the Inspector to determine a source's potential to emit chromium.

_____ Major source if has the potential to emit ten tons per year of any one hazardous air pollutant (HAP) or twenty five tons per year of any combination of HAPs
_____ Area source if not a major source
_____ Major source if an area source increases the potential to emit above ten tons per year of any one HAP or twenty five tons per year of any combination of HAPs

4.0 Type of Bath Solution Used: if an operator uses a trivalent solution with a wetting agent incorporated as a bath ingredient, many requirements may be avoided, as indicated throughout this checklist.

_____ hexavalent (chromic acid)
_____ trivalent without a wetting agent as a bath ingredient
_____ trivalent with a wetting agent as a bath ingredient

5.0 Type of Air Pollution Control Device: the owner or operator should have documentation available on the control device(s) utilized and should demonstrate that the device(s) is functioning properly.

Add-on air pollution control devices:
_____ Composite mesh-pad system (CMP)
_____ Packed bed scrubber (PBS)
_____ CMP/PBS system
_____ Fiber-bed mist eliminator
_____ Other _____ (need Division or EPA approved documentation)

Chemical fume suppressant air pollution control devices:
_____ Foam blanket
_____ Wetting agent
_____ Other _____ (need Division or EPA approved documentation)

If using both an add-on and fume suppressant air pollution control device:
Type of add-on devices(s): _____
_____
Type of fume suppressant(s): _____
_____

6.0 Number of Tanks Attached to the Same Air Pollution Control Device:

_____ Single tank attached to one control device

_____ Multiple tanks attached to one control device
_____ Same operation performed at each tank
_____ Same emission limit for each tank
_____ Control device controls sources that are not chromium electroplating or anodizing tanks

7.0 Emission Limits: using the information from sections 1.0 and 4.0, answer:

The emission limit for this source, as determined by Tables 1 and 2 (pages 29 and 30) is
_____

Describe whether the source met the emission limits by the required compliance date
_____

If the source failed to meet the required emission limits by the compliance date, explain why
_____
_____

8.0 Operation and Maintenance (O&M) Plan: if a decorative chromium tank uses a trivalent chromium solution that includes a wetting agent as an ingredient, the operator need not comply with the requirements in this section.

_____ O&M plan is kept on record and available upon inspection, for the life of the affected source or until the source is no longer subject to the Chromium NESHAP
_____ The owner or operator, upon revision of the O&M plan, kept previous versions for a period of five years after each revision
_____ O&M plan is incorporated by reference into the facility's operating permit

O&M plan for this facility (yes/no):
_____ specifies the operating and maintenance criteria for the affected source
_____ specifies the housekeeping procedures (Table 4, page 34)
_____ specifies the add-on air pollution control device, if used to comply with the emission requirements
_____ specifies the process and control system monitoring equipment
_____ includes a standardized checklist to document the operation and maintenance of the air pollution control device(s) and process and control system monitoring equipment
_____ specifies procedures to be followed to ensure that equipment or process malfunctions due to poor maintenance or other preventable conditions do not occur

_____ includes a systematic procedure for identifying malfunctions of process equipment, add-on air pollution control devices, and process and control system monitoring equipment and for implementing corrective actions to address such malfunctions

If the facility utilizes any add-on air pollution control devices:
_____ the O&M plan incorporates operation and maintenance practices for any add-on air pollution control device or monitoring equipment identified in Table 3 (page 33)

List the applicable operation and maintenance practices for the add-on air pollution control device(s) uses and whether the operator has complied:

Add-on Air Pollution Control Device	Operation and Maintenance Practice	Compliance (yes/no)
1.	a. b. c. d.	a. b. c. d.
2.	a. b. c. d.	a. b. c. d.
3.	a. b. c. d.	a. b. c. d.

_____ if the specific equipment used is not identified in Table 3, the O&M plan shall incorporate proposed operation and maintenance practices which must be submitted to the Division and the EPA

The owner or operator operates and maintains all of the following in a manner consistent with "good air pollution control practices," including quarterly inspections (yes/no):
_____ affected sources and ductwork of the sources
_____ associated control devices
_____ monitoring equipment

The following documentation was provided to establish whether the owner or operator properly maintained the source in a manner consistent with "good air pollution control practices" (yes/no):
_____ monitoring results
_____ review of the O&M plan, procedures, and records
_____ inspection of the source
_____ other _____

O&M plan does not meet the requirements, revisions must be made:
_____ does not address a malfunction that has occurred
_____ fails to provide for the operation of the affected source, the air pollution control technique, or the control system and process monitoring equipment during a malfunction in a manner consistent with "good air pollution control practices"
_____ does not provide adequate procedures for correcting malfunctions

Has a malfunction occurred? _____

Did the O&M plan fail to or inadequately address the malfunction? _____
If yes, explain _____

If the O&M plan failed to or inadequately addressed the malfunction, did the owner or operator revise the O&M plan within forty five days after the event?

___
If no, explain _____
If yes, does the revised O&M plan include:
_____ procedures for operating and maintaining the process equipment, add-on air pollution control device, or monitoring equipment during similar malfunctions
_____ a program for corrective actions for such events

Did the owner or operator take actions inconsistent with the procedures specified in the O&M plan during periods of malfunction?

_____
If yes, did the operator:
_____ record the actions taken for the event and report by phone such actions within two working days after actions were taken
_____ send a letter within seven working days after the end of the event
_____ provide the Inspector with copies of such reports and records

9.0 Initial Performance Test:

If the tank meets the following description, it is exempt from the initial performance test:
_____ decorative chromium anodizing tank using a trivalent chromium bath that incorporates a wetting agent as a bath ingredient

For non-exempt tanks, the owner or operator must have performed an initial performance test within 180 days of the source's compliance date.

If no initial performance test was performed, explain
_____
_____

_____ Initial performance test was submitted to the Division
If no, explain _____
_____

_____ Initial performance test was reviewed by the Division on _____
If no, explain _____
_____

_____ The Division provided a final determination to the source (and the County) whether the source was in compliance

Indicate the parameters obtained in the initial performance test to determine whether the source is in ongoing compliance.

Air Pollution Control Technique	Parameter Obtained in the Initial Test	Revised Chromium NESHAP Parameters
Composite mesh-pad	Pressure drop across system: _____ in. w.c. ± 1 in.	± 2 in.
Packed bed scrubber	Pressure drop across system: _____ in. w.c. ± 1 in. & Velocity pressure at system inlet: _____ ± 10% ave. vel.	
Fiber-bed mist eliminator	Pressure drop across upstream control device that prevents plugging: _____ in. w.c. ± 1 in.	
Wetting agent	Surface tension at the bath: _____ dynes/cm	40 dynes/cm by stalagmometer, 33 by tensiometer
Foam blanket	Foam blanket thickness: _____ in. or cm	

10.0 Ongoing Compliance Monitoring: the Inspector should determine the type(s) of air pollution control technique(s) and whether the owner or operator has met the applicable ongoing compliance monitoring requirement.

Operator uses an add-on air pollution control device and measures:

Air Pollution Control Device	Yes/No	Monitored Parameter	Monitoring Frequency
Composite mesh-pad (CMP)	_____	Monitor pressure drop across system	Daily
Packed bed scrubber (PBS)	_____ _____	Monitor pressure drop across system & Monitor velocity pressure at system inlet	Daily Daily
CMP/PBS	_____ _____	Monitor pressure drop across the CMP & Monitor the velocity pressure at system inlet	Daily Daily
Fiber-bed mist eliminator	_____	Monitor pressure drop across the upstream control device that prevents plugging	Daily
Other	_____	Operator has determined the appropriate	Appropriate

	_____ _____	parameter: _____ The Division has approved the parameter The Operator has measured the parameter	monitoring frequency: _____

The Inspector has personally seen the owner or operator measures, if required:
_____ pressure drop across CMP system
_____ pressure drop across PBS system
_____ pressure drop across the FMBE system
_____ velocity pressure at the system inlet
_____ other _____

If the pressure drop must be measured, did the monitored value(s) (yes/no):
_____ fall within the range established during the initial performance test
_____ fall within ± 2 inches above the average water column measured during three performance tests
If yes to either, the source is in compliance.

If velocity pressure must be measured, did the monitored value(s) (yes/no):
_____ fall within the range established during the initial performance test
_____ fall within ± 10 percent above the average velocity pressure measured during three performance tests
If yes to either, the source is in compliance.

Operator uses a chemical fume suppressant air pollution control technique and takes the following measurements:

Air Pollution Control Device	Yes/No	Monitored Parameter	Monitoring Frequency
Wetting agent	_____	Measure the surface tension at the bath	Daily or _____
Foam blanket	_____	Monitor foam blanket thickness	4 hours[a,b] or _____
Combination wetting agent and foam blanket	_____	Measure the surface tension at the bath	Daily or _____
Chemical fume suppressant and add-on control device	_____ _____	Measure the surface tension at the bath & Monitor foam blanket thickness	Daily or _____ Hourly[b,c] or _____
Other	_____ _____ _____	Operator has determined the appropriate parameter: _____ The Division has approved the parameter The Operator has measured the parameter	Appropriate monitoring frequency: _____

[a] If there are no exceedance of the maximum surface tension after forty hours of operation, then the monitoring frequency can be decreased to once every eight hours. If there are no exceedances for the next forty hours, then the frequency can be decreased to once every forty hours. If an exceedance occurs, the initial monitoring schedule must be resumed.
[b] The initial schedule must be resumed for every new tank solution.

[c] If there are no exceedances of the minimum foam blanket thickness after forty hours of operation, then the monitoring frequency can be decreased to once every four hours. If there are no exceedances for the next forty hours of operation, then the frequency can be decreases to once every eight hours. If an exceedance occurs, the initial monitoring schedule must be resumed.

Inspector has personally seen the owner or operator properly take the following measurements, if required:
_____ surface tension and/or
_____ foam blanket thickness

_____ Did the surface tension exceed the maximum surface tension established by the owner or operator for pressure drop?
If no, the source is in compliance.
_____ Did the foam blanket thickness fall below the minimum foam blanket thickness or fall below 1 inch (2.54 cm) in thickness?
If no, the source is in compliance.

If the facility has multiple tanks and meets one of the following conditions, go to Table 2 (page 30) to obtain equations used to verify compliance with the emissions limits:
_____ the multiple tanks include a chromium electroplating or chromium anodizing tank among other tanks not affected by the regulation, or
_____ the multiple tanks include chromium tanks performing different operations subject to different emissions limits, which may or may not be controlled with nonaffected sources, or
_____ the multiple tanks include chromium anodizing tanks subject to different emissions limits, which may or may not be controlled with nonaffected sources.

11.0 Recordkeeping: the owner or operator must keep the following records for at least five years to demonstrate compliance.

Inspection and maintenance records
_____ work practices conducted on schedule
_____ maintenance performed on process, control system(s), and monitoring equipment

Malfunction records
_____ correction of malfunction consistent with the O&M plan no records required
_____ correction of malfunction not consistent with O&M plan following records required: occurrence, duration, and cause of any malfunction of the process, air pollution control device, and monitoring equipment

Performance test records

_____ performance test results including process and air pollution control parameter measurements used during testing and any additional measurements

Monitoring data records, include at a minimum
_____ identify control system(s)
_____ identify the monitored parameter(s)
_____ identify the value of the monitored parameter(s)
_____ identify the time and date when the parameter(s) was monitored

Excess emission records
_____ excess emission records must include at a minimum the start and end times and dates of each period of excess emissions
_____ excess caused by malfunction operator records: type of malfunction, duration of malfunction, cause of malfunction, corrective actions, and date and time of malfunction
_____ excess emission caused by something other than malfunction

Process records, include at a minimum
_____ process operating time for each tank
_____ time and date of each addition of fume suppressant, if using

Miscellaneous records
_____ other records required by permit or notice of violation
_____ documentation supporting the requirements of a waiver, if granted

12.0 Reporting:

Type of Source	Relevant Dates	Yes/No	Requirements
Existing	Initial startup before 1/25/1995	_____	Initial notification on or before 7/24/1995
New or reconstructed	Initial startup after 1/25/1995, constructed or reconstructed before 1/25/1995	_____ _____	Notification of date of construction or reconstruction Notification of actual startup within 30 days
New or reconstructed	Initial startup after 1/25/1995, constructed or reconstructed after 1/25/1995	_____ _____	Notification of date of construction or reconstruction within 30 days Notification of actual startup within 30 days

_____ Notification of construction or reconstruction of the facility, if begun after January 25, 1995

_____ Notification of initial performance testing at least 60 calendar days prior the scheduled date of the test

A site specific test plan prior to the initial performance test that includes:
_____ description of the process to be tested
_____ conditions under which testing is to be conducted
_____ sampling location description
_____ test method to be used

_____ A performance test report, including
_____ description of the process to be tested
_____ sampling location descriptions
_____ sampling and analysis procedures and any modifications to the standard procedures
_____ description of the internal and external quality assurance program
_____ records of operating conditions during testing, preparation of the standards, and calibration procedures
_____ raw data sheets for field sampling and field and laboratory analyses
_____ documentation of calculations
_____ any additional information required by the test method
_____ internal quality assurance program, including activities planned by routine operators and analysts to provide assessment of test data precision
If no, explain _____

A report of the following was sent within 90 days after the performance test and no later than 30 days after the compliance date
_____ performance test results
_____ compliance status
_____ copy of performance test report

A compliance status report that included
_____ applicable emission limitation and methods used to determine compliance
_____ if performance test is required, the test report documenting the results
_____ type and quantity of hazardous air pollutants emitted
_____ specific operating parameter value, or range, for each monitored parameter
_____ methods that will be used to determine continuous compliance
_____ description of the air pollution control technique for each emission point
_____ statement that the operator has the O&M plan completed and on file
_____ statement by the operator as to whether the tank is in compliance

An ongoing compliance status report, based on
_____ a major source: prepare and submit a report to the Division every six months unless the Division decides more frequent reports are required
_____ a major source that experienced exceedances: report to the Division every three months

_____ an area source: report to the Division annually
_____ an area source that experienced exceedances ≥ 1% of total operating time for the reporting period and total duration of malfunctions is ≥ 5% of the total operating time: report to the Division every six months

The owner or operator of a decorative chromium electroplating tank using a trivalent chromium bath that incorporates a wetting agent as a bath ingredient must demonstrate the following reporting:
_____ an initial notification by July 24, 1995, that the source is subject to the regulation including a statement that the trivalent chromium process incorporating a wetting agent will be used and a list of bath components that comprise the trivalent chromium bath with the wetting agent clearly identified
_____ a report of the performance test results and compliance status after the test or by February 24, 1996
_____ if the owner or operator changed the process from trivalent chromium bath to another process, the owner or operator must submit a report within 30 calendar days after the change that contains a description of how the process was changed; emission limitation that now applies; and the notification, reporting, and recordkeeping requirements in Sections 10.0 and 11.0

Table 1
Emission Limits for Chromium Electroplating Tanks – Single Source/Tank

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

Table 2
Emission Limits for Chromium Electroplating Tanks – Multiple Sources/Tanks

Group of tanks with any one tank operating	Common add-on air pollution control device	Each tank performs same type of operation	Each tank subject to the same emission limits	Control device controls nonaffected tanks	Required emission limits
Hard chromium, Decorative chromium, Chromium anodizing	Yes	Yes	Yes	No	63.342(c), (d), or (e) [a]
Hard chromium, Decorative chromium, Chromium anodizing	Yes	Yes	Yes	Yes	63.344(e)(3) [b]
Hard chromium, Decorative chromium, Chromium anodizing	Yes	No	Yes	Yes or no	63.344(e)(4) [c]
Hard chromium, Decorative chromium, Chromium anodizing	Yes	Yes	No	Yes or no	63.344(e)(4) [c]

[a] 63.342(c) standards for open or enclosed surface hard chromium electroplating tanks, (d) standards for decorative chromium electroplating tanks using a chromic acid bath and chromium anodizing tanks, (e) standards for decorative chromium electroplating tanks using a trivalent chromium bath (see Table 1.1)

[b] Special compliance provisions for multiple sources, performing the same type of operation, subject to the same emission limits, and controlled by a common add-on air pollution control device (also controlling emissions from sources not affected by these standards):

(i) Calculate the cross-sectional area of each inlet duct, including those not affected by the standard

(ii) Determine the total sample time per test run by dividing the total inlet area from all tanks connected to the control system by the total inlet area for all ducts associated with the affected source, then multiple this number by two hours; this calculated time is the minimum sample time required per test run

(iii) Perform Method 306 or 306A testing and calculate an outlet mass emission rate

(iv) Determine the total ventilation rate from the affected sources by using equation:

$$VR_{tot} \times IDA_i / \Sigma IA_{total} = VR_{inlet}$$

where VR_{tot} is the average total ventilation rate in dscm/min for the three test runs as determined at the outlet by mass of the Method 306 or 306A testing; IDA_i is the total inlet duct area for all ducts associated with affected sources; ΣIA_{total} is the sum of all inlet duct areas from both affected and nonaffected sources; and VR_{inlet} is the total ventilation rate from all inlet ducts associated with affected sources.

(v) Establish the allowable mass emission rate of the system (AMR_{sys}) in milligrams of total chromium per hour (mg/hr) using equation:

$$\Sigma VR_{inlet} \times EL \times 60 \text{ minutes/hour} = AMR_{sys}$$

where ΣVR_{inlet} is the total ventilation rate in dscm/min from the affected sources and EL is the applicable emission limitation from 40 C.F.R. 63.342 in mg/dscm. The allowable mass emission rate (AMR_{sys}) calculated should be equal to or more than the outlet three-run average mass emission rate determined from Method 306 or 306A testing in order for the source to be in compliance with the standard.

[c] Special compliance provisions for multiple sources, performing different types of operations, and controlled by a common add-on air pollution control device (that may or may not also be controlling emissions from sources not affected by these standards) OR multiple sources, performing same types of operations, subject to different emission limits, and controlled by a common add-on air pollution control device:

(i) Calculate the cross-sectional area of each inlet duct, including those not affected by the standard

(ii) Determine the total sample time per test run by dividing the total inlet area from all tanks connected to the control system by the total inlet area for all ducts associated with the affected source, then multiple this number by two hours; this calculated time is the minimum sample time required per test run

(iii) Perform Method 306 or 306A testing and calculate an outlet mass emission rate

(iv) Determine the total ventilation rate from the affected sources by using equation:

$$VR_{tot} \times IDA_i / \Sigma IA_{total} = VR_{inlet,a}$$

where VR_{tot} is the average total ventilation rate in dscm/min for the three test runs as determined at the outlet by mass of the Method 306 or 306A testing; IDA_i is the total inlet duct area for all ducts conveying chromic acid from each type of affected source performing the same operation, or each type of affected source subject to the same emission limitation; ΣIA_{total} is the sum of all inlet duct areas from both affected and nonaffected sources; and $VR_{inlet,a}$ is the total ventilation rate from all inlet ducts conveying chromic acid from each type of affected source performing the same operation, or each type of affected source subject to the same emission limitation.

(v) Establish the allowable mass emission rate in mg/hr for each type of affected source that is controlled by the add-on air pollution control device using the appropriate equation:

$$VR_{hc1} \times EL_{hc1} \times 60 \text{ minutes/hour} = AMR_{hc1}$$
$$VR_{hc2} \times EL_{hc2} \times 60 \text{ minutes/hour} = AMR_{hc2}$$
$$VR_{dc} \times EL_{dc} \times 60 \text{ minutes/hour} = AMR_{dc}$$
$$VR_{ca} \times EL_{ca} \times 60 \text{ minutes/hour} = AMR_{ca}$$

where hc applies to the total centilation rates for all hard chromium electroplating tanks subject to the same emission limitation; dc applies to the total of ventilation rates for the decorative chromium electroplating tanks; ca applies to the tltal of ventilation rates for the chromium anodizing tanks; and EL is the applicable emission limitation from 40 C.F.R. 63.342 in mg/dscm. There are two equations for hard chromium electroplating tanks because different emission limitations may apply (e.g., a new tank versus an existing, small tank).

(vi) Establish the allowable mass emission rate (AMR_{sys}) in mg/hr for the system using the equation 8, including each type of affected source as appropriate:

$$AMR_{hc1} + AMR_{hc2} + AMR_{dc} + AMR_{ca} = AMR_{sys}$$

The allowable mass emission rate calculated from this equation should be equal to or more than the outlet three-run average mass emission rate determined from Method 306 or 306A testing in order for the source to be in compliance with the standards.

Table 3
Summary of Operation and Maintenance Practices

Control Device	Work Practice Standards	Time Required
Composite Mesh Pad System	5. Visually inspect device to ensure there is proper drainage, no chromic acid buildup on the pads, and no evidence of chemical attack on the structural integrity of the device. 6. Visually inspect back portion of the mesh pad closest to the fan to ensure there is no breakthrough of chromic acid mist. 7. Visually inspect ductwork from tank to the control device to ensure there are no leaks. 8. Perform washdown of the composite mesh pads in accordance with manufacturer's recommendations.	5. 1/quarter 6. 1/quarter 7. 1/quarter 8. Per manufacturer
Packed Bed Scrubber System	8. Visually inspect device to ensure there is proper drainage, no chromic acid buildup on the backed beds, and no evidence of chemical attack on the structural integrity of the device. 9. 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. 10. Visually inspect ductwork from tank to the control device to ensure there are no leaks. 11. Add fresh makeup water to the top of the packed bed. [a,b]	2. 1/quarter 12. 1/quarter 13. 1/quarter 14. Whenever makeup is added
CMP/PBS System	Same as for CMP system	Same as for CMP system
Fiber-Bed Mist Eliminator[c]	4. Visually inspect fiber-bed unit and prefiltered device to ensure there is proper drainage, no chromic acid buildup, and no evidence of chemical attack on the structural integrity. 5. Visually inspect ductwork from tank or tanks to the control device to ensure there are no leaks. 6. Perform washdown of fiber elements in accordance with the manufacturer's recommendations.	5. 1/quarter 6. 1/quarter 7. 1/quarter 8. Per manufacturer
Other devices	To be proposed by the source for approval by the EPA.	To be proposed by the source
Monitoring Equipment		
Pilot Tube	Backflush with water, or remove from duct and rinse with fresh	1/quarter

	water. Replace and rotate 180 ° to the ensure same zero reading. Check pilot tube ends for damage, replace if cracked or fatigued.	
Stalagmometer	Follow manufacturer's recommendations.	

[a] If greater than 50 percent of the scrubber water is drained (e.g., for maintenance purposes), makeup water may be added to the scrubber basin.

[b] For horizontal-flow scrubbers, top is defined as the section of the unit directly above the packaging media such that the makeup water would flow perpendicular to the air flow through the packing. For vertical-flow units, the top is defined as the area downstream of the packing material such that the makeup water would flow countercurrent to the air flow through the unit.

[c] Work practice standards for the control device installed upstream of the fiber-bed mist eliminator to prevent plugging do not apply as long as the work practice standards for the fiber-bed unit are followed.

Table 4
Housekeeping Practices

For	You must:	At this minimum frequency
1. Any substance used in an affected chromium electroplating or chromium anodizing tank that contains hexavalent chromium.	a. Store the substance in a closed container in an enclosed storage area or building; and b. Use a closed container when transporting the substance from the enclosed storage area.	a. At all times, except when transferring the substance to and from the container. b. Whenever transporting the substance, except when transferring the substance to and from the container.
2. Each affected tank, to minimize spills of bath solution that result from dragout. Note: this measure does not require the return of contaminated bath solution to the tank. This requirement applies only as the parts are removed from the tank. Once away from the tank area, any spilled solution must be handled as in item 4.	a. Install drip trays that collect and return to the tank any bath solution that drips or drains from parts as the parts are removed from the tank; or b. Contain and return to the tank any bath solution that drains or drips from parts as the parts are removed; or c. Collect and treat in an onsite wastewater treatment plant any bath solution that drains or drips from parts as the parts are removed.	a. Prior to operating the tank. b. Whenever removing parts from an affected tank. c. Whenever removing parts from an affected tank.
3. Each spraying operation for removing excess chromic acid from parts removed from, and occurring over, an affected tank.	Install a splash guard to minimize overspray during spraying operations and ensure that any hexavalent chromium laden liquid captured by the splash guard is returned to the electroplating or anodizing tank.	Prior to any such spraying operation.
4. Each operation that involves the handling or use of any substance used in an affected chromium electroplating or chromium anodizing tank that contains hexavalent	Begin cleanup, or otherwise contain, all spills of the substance. Note: substances that fall or flow into drip trays, pans, sumps, or other containment areas are not considered spills.	Within 1 hour of the spill.

chromium.		
5. Surfaces within the enclosed storage area, open floor area, walkways around affected tanks contaminated with haxavalent chromium from an affected chromium electroplating or chromium anodizing tank.	a. Clean the surfaces using one or more of the following: HEPA vacuuming; hand-wiping with a damp cloth; wet mopping; hose down or rise with potable water that is collected in a wastewater collection system; other cleaning method approved by the permitting authority; or b. Apply a non-toxic chemical dust suppressant to the surfaces.	a. At least once every 7 days if one or more electroplating or anodizing tanks were used, or at least after every 40 hours of operation of one or more affected electroplating or anodizing tanks, whichever is later. b. According to manufacturer's recommendations.
6. All buffing, grinding, or polishing operations located in the same room as electroplating or anodizing operations.	Separate the operation from any affected electroplating or anodizing operation by installing a physical barrier; the barrier may take the form of plastic strip curtains.	Prior to beginning the buffing, grinding, or polishing operation.
7. All chromium or chromium-containing wastes generated from housekeeping activities.	Store, dispose, recover, or recycle the wastes using practices that do not lead to fugitive dust and in accordance with hazardous waste requirements.	At all time.