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A GUIDEBOOK ON HOW TO COMPLY WITH THE CHROMIUM ELECTROPLATING AND ANODIZING NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

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Disclaimer

This report is not a legally binding document, and is not meant to replace the published regulation titled "National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks." This document presents specific aspects of the regulation and may not cover all parts of the regulation. This document is an elaboration of the appropriate legal document(s), and the final authority rests solely in the legal document(s). Refer to the Office of the Federal Register website for the latest regulatory text for this rulemaking: http://www.gpoaccess.gov/fr/index.html.

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CHAPTER 1

INTRODUCTION

BACKGROUND

In November of 1994, the U. S. Environmental Protection Agency (EPA) issued national regulations to control air emissions of chromium from chromium electroplating and anodizing tanks. The regulation appeared in the January 25, 1995 edition of the Federal Register [volume 60, beginning on page 4948]. Final amendments to this rule were published in the July 19, 2004 edition of the Federal Register [volume 69, beginning on page 42885]. Refer to the Office of the Federal Register website for the latest regulatory text for this rulemaking: http://www.gpoaccess.gov/fr/index.html.

Why is EPA regulating chromium electroplating and anodizing tanks? The Clean Air Act as amended in 1990 (CAA) directs EPA to regulate emissions of a number of toxic chemicals, including chromium, from a wide range of industrial sources. The EPA is regulating emissions of chromium from electroplating and anodizing tanks to meet the requirements of the CAA. The hexavalent form of chromium is highly toxic and a known human carcinogen, causing lung cancer; less is known about the cancer risk of the trivalent form of chromium, but it can accumulate in the lungs and may result in decreased lung function after continuous exposure. The regulatory requirements differ for tanks that use a trivalent chromium bath rather than a chromic acid (hexavalent chromium) bath.

Chromium electroplating and anodizing tanks are one of the largest sources of chromium emissions in the United States. Over 5,000 facilities perform chromium electroplating and/or anodizing in the United States. Many facilities are small job shops that are located near residential areas. The EPA estimates that full compliance with its new regulation will result in a reduction of about 173 tons of chromium emitted into the air annually, or about a 99-percent reduction from today's levels.

PURPOSE OF GUIDEBOOK

The purpose of this guidebook is to provide a straightforward overview of this regulation and to equip businesses with the basic information they need to comply with the regulation. This guidebook is not a complete and full statement of the legal and technical requirements of the regulation. As noted previously, refer to the Office of the Federal Register website for the latest regulatory text for this rulemaking: http://www.gpoaccess.gov/fr/index.html .

ORGANIZATION

Chapter 2 presents an overview of the requirements of the regulation, and Chapters 3 through 6 explain these requirements in more detail. Chapter 7 discusses some pollution prevention opportunities associated with the regulation. Chapter 8 provides an explanation of how this regulation relates to other Federal and State or local requirements, including permitting. Estimated costs for businesses to comply with the regulation are provided in Chapter 9. Sources of more information on the regulation are provided in Chapter 10. Appendix A contains a glossary of terms. A list of known facilities (as of 1995) affected by this regulation are included as Appendix B. Appendix C provides example forms for monitoring, recordkeeping, and reporting.

CHAPTER 2

OVERVIEW OF THE REGULATION

The regulation affects all facilities that use chromium electroplating or anodizing tanks, regardless of size. How you are affected depends on the size and type (e.g., hard (enclosed, open surface), decorative, or anodizing) of operation you have and the control technique(s) that you use to comply with the regulation. In general, the regulation specifies:

- Emission limits
- Work practices
- Initial performance testing
- On-going compliance monitoring
- Recordkeeping
- Reporting

Each of these requirements is summarized below.

EMISSION LIMITS

The regulation specifies emission limits, expressed as a concentration of chromium in milligrams per dry standard cubic meter of exhaust air (mg/dscm) and that are based on the use of a certain control technique. However, you may use another control technique as long as the level of control is the same or better. These emission limits apply during tank operation only. The emission limits and the control techniques used as the basis for these limits are:

For open-surface hard chromium electroplating tanks:

- not allowing the concentration of total chromium in the exhaust gas stream discharged to the atmosphere to exceed 0.03 mg/dscm for small, existing open-surface hard chromium electroplating tanks (packed-bed scrubber or "PBS"); or
- not allowing the concentration of total chromium in the exhaust gas stream discharged to the atmosphere to exceed 0.015 mg/dscm for all other open-surface hard chromium electroplating tanks (composite mesh-pad or "CMP" system).

For enclosed hard chromium electroplating tanks:

- not allowing the concentration of total chromium in the exhaust gas stream discharged to the atmosphere to exceed 0.03 mg/dscm for small, existing open-surface hard chromium electroplating tanks (packed-bed scrubber or "PBS");

- by not allowing the concentration of total chromium in the exhaust gas stream discharged to the atmosphere to exceed 0.015 mg/dscm for all other open-surface hard chromium electroplating tanks (composite mesh-pad or "CMP" system);
- by not allowing the mass rate of total chromium (chromium (as calculated in 63.344(f)(1)(i)) in the exhaust gas stream discharged to the atmosphere exceed the maximum allowable mass emission rate, as follows:

MAMER = ETSA x K x 0.015 mg/dscm

Where:

MAMER = alternative emission rate for enclosed hard chromium electroplating tanks in mg/hr.

ETSA = the hard chromium electroplating tank surface area in square feet (ft^2).

K = a conversion factor, 425 dscm/(ft^2 x hr); or

- for existing small sources, by not allowing the mass rate of total chromium (as calculated in 63.344(f)(1)(ii)) in the exhaust gas stream discharged to the atmosphere to exceed the maximum allowable mass emission rate as follows:

The maximum allowable mass emission rate is calculated as follows:

MAMER = ETSA x K x 0.03 mg/dscm

Where:

MAMER = alternative emission rate for enclosed hard chromium electroplating tanks in mg/hr.

ETSA = the hard chromium electroplating tank surface area in square feet (ft^2).

K = a conversion factor, 425 dscm/(ft^2 x hr).

WORK PRACTICES

The regulation specifies work practice standards to ensure that air pollution control systems and monitoring equipment are being properly maintained and operated. The work practice standards require that most facilities develop an operation and maintenance (O&M) plan for the facility. Additional work practice requirements include quarterly inspections of control devices, ductwork, and monitoring equipment.

INITIAL PERFORMANCE TESTING

Initial performance testing is required (with some exceptions noted below) to demonstrate that you are meeting the emission limit/mass emission rate for your type of operation. This is a one-time test. However, sources that meet the following criteria do not have to perform the initial test:

- Hard (open surface and enclosed) chromium electroplating tanks, decorative chromium electroplating tanks or chromium anodizing tanks that use a chemical fume suppressant containing a wetting agent and limit the surface tension of the bath to a maximum of 45 dynes/cm as measured by a stalagmometer or 35 dynes/cm as measured by a tensiometer at any time during operation of the tank; and
- Decorative chromium electroplating tanks that use a trivalent chromium bath.

The regulation contains test methods (EPA Reference Methods 306 and 306A) for measuring the chromium concentration discharged to the atmosphere.

ONGOING COMPLIANCE MONITORING

Continuous compliance with the regulation is demonstrated through ongoing compliance monitoring. Monitoring of specific operating parameters that affect the performance of the particular control technique you are using is required to ensure continuous compliance with the emission limits. Therefore, the monitoring requirements vary depending on the type of control technique that you use.

If you use an add-on air pollution control device that is specified in the regulation, you must monitor the pressure drop across the unit daily. If you use a packed-bed scrubber, you must also monitor the velocity pressure (i.e., the velocity of the gas stream at the inlet of the unit) daily. The surface tension of the bath or the foam thickness must be monitored if you use wetting agents or foam blankets, respectively (using a stalagmometer or tensiometer). The regulation also contains a test method for measuring the surface tension of the bath (EPA Reference Method 306B) whereby a maximum surface tension value that corresponds to compliance with an applicable emission limit can be set as a parameter measurement for monitoring continuous compliance with the limit. If you use a control system not specified in the regulation, you must determine the appropriate parameter(s) to monitor and get EPA approval.

RECORDKEEPING

The regulation requires sources to keep records to document compliance with the regulation. The required documentation includes: (1) inspection records; (2) equipment maintenance records; (3) records

of the occurrence, duration, and cause of excess emissions (see Chapter 5 for an explanation of excess emissions); (4) performance test results; and (5) monitoring data. All records must be kept for 5 years. If you operate a decorative chromium electroplating tank that uses a trivalent chromium bath, you only need to keep records of bath component purchases.

REPORTING

The extent and frequency of reporting depends on the type and size of your source. The regulation requires an initial notification that you are subject to the regulation, a notification of performance testing, and a report of the performance test results and compliance status after the test. In addition, you must prepare reports that contain information on the ongoing compliance status of your facility. If you operate a decorative chromium electroplating tank that uses a trivalent chromium bath, you only need to submit the initial notification and an initial compliance status report.

CHAPTER 3

DOES THIS REGULATION APPLY TO ME?

The regulation applies to virtually all hard (open surface and enclosed) and decorative chromium electroplaters and chromium anodizers as defined in the regulation, regardless of size (see exemptions listed below). Both major and area sources are covered by the regulation. (Major sources are sources emitting 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. Area sources, also referred to as "nonmajor sources," are sources that do not qualify as major. The EPA believes that the high toxicity of chromium compounds and the close proximity of many small shops to residential areas warrant regulation of all sources, even small businesses.

Hard chromium electroplating operations deposit a thick layer of chromium directly on a base metal to provide wear and corrosion resistance, low friction, and hardness (for hydraulic cylinders, industrial rolls, etc.).

Decorative chromium electroplating operations deposit a thin layer of chromium on a base material to provide a bright finish and wear and tarnish resistance (for bicycles, auto trim, tools, etc.). Decorative chromium electroplating tanks may use a chromic acid bath or a trivalent chromium bath.

Chromium anodizing operations form a chromium oxide layer on aluminum to provide corrosion resistance (for aircraft parts, architectural structures, etc.).

See Appendix A of this guidebook for complete definitions of these terms as they appear in the regulation.

Are any sources exempt? The regulation specifically exempts certain types of sources. These sources are:

- Process tanks that may contain low concentrations of chromium but neither chromium electroplating nor chromium anodizing is taking place in the tank (e.g., rinse tanks, etch tanks, and cleaning tanks);
- Tanks that contain a chromium solution, but in which no electrolytic process occurs (e.g., chrome conversion coating tank); and
- Tanks that are used for research and laboratory operations.

How many facilities are affected and where are they located? The EPA estimates that (in 1995) there were about 5,020 affected facilities nationwide. Of the estimated 5,020 facilities, an estimated 1,540 were hard chromium electroplaters, 2,800 were decorative chromium electroplaters, and 680 were chromium anodizers. Appendix B of this guidebook lists these facilities.

How do you determine what type of facility you have? The terms "hard (open surface and enclosed) chromium electroplating," "decorative chromium electroplating," and "chromium anodizing" are defined by typical process parameters, as well as by function. Therefore, regardless of what name you assign to your process, you will be regulated according to the functions

and process parameters of your tank. Process parameters include the plating thickness, the current density applied, and the plating time. Table 3-1 summarizes the functions and process parameters associated with the three types of facilities.

Some facilities may have operations that do not fit exactly into one of the definitions in the regulation. In this case, judgment and communication between the facility and its State or local air pollution control agency is required.

For example... A facility that operates a "black chromium electroplating process" may qualify as either a decorative or a hard chromium electroplater, depending on the process parameters at the particular source. In one case, a black chromium electroplating process that calls for a current density of 40 to 90 amperes per square foot *(A/ft^2)*, a plating time of 30 to 45 minutes (min), and a plate thickness of 5 microns (μm) would best fit the description of a hard chromium plating process. However, another black chromium electroplating operation that uses 144 to 288 *A/ft^2*, a plating time of 5 min, and a plate thickness of 0. 13 to 0.51 μm would best fit the description of a decorative plating process. If you are unsure about which definition fits your operation, contact your State or local air pollution control agency.

TABLE 3-1. FUNCTIONS AND PROCESS PARAMETERS OF THE TYPES OF OPERATIONS

Type of operation	Functions	Process Parameters
Hard (or "industrial," open surface and enclosed) chromium electroplating	Provides a surface with functional properties such as: ▪ Wear resistance ▪ A low coefficient of friction ▪ Hardness ▪ Corrosion resistance.	Specified in regulation: Plate thickness of 1.3 to 760 microns Current density of 150 to 600 A/ft^2 Plating time of 20 minutes to 36 hours Others: Chromic acid concentration of 30 to 50 oz/gal Sulfuric acid concentration of 0.3 to 0.5 oz/gal Solution temperature of 120 to 150 degrees F
Decorative chromium electroplating	Provides a bright surface with wear-and-tarnish resistance.	Specified in regulation: Plate thickness of 0.003 to 2.5 microns (chromic acid bath) or 0. 13 to 25 microns (trivalent chromium bath) Current density of 50 to 220 A/ft^2 Plating time of 0.5 to 5 minutes Others: Chromic acid concentration of 30 to 50 oz/gal Sulfuric acid concentration of 0.3 to 0.5 oz/gal Solution temperature of 100 to 115 degrees F
Chromium anodizing	Provides corrosion resistance or electrical insulation.	Specified in regulation: Chromic acid concentration of 6.67 to 13.3 oz/gal Others: Film thickness of 0.02 to 0.05 microns Current density of 144 to 720 A/ft^2 Anodizing time of 30 to 60 minutes Solution temperature of 90 to 95 degrees F pH of 0.5 to 0.85 Voltage of 20 or 40 volts

CHAPTER 4

WHAT DO I NEED TO DO TO COMPLY?

SUMMARY OF THE REQUIREMENTS

The major requirements of the regulation can be categorized as follows:

- Emission limits
- Work practices
- Initial performance testing
- Ongoing compliance monitoring
- Recordkeeping
- Reporting

Decorative chromium electroplaters must be in compliance with the regulation by January 25, 1996. Hard chromium electroplaters and chromium anodizers must be in compliance with the regulation by January 25, 1997.

Emission limits and work practice requirements are discussed in this chapter. Testing and monitoring requirements are covered in Chapter 5, and recordkeeping and reporting requirements are discussed in Chapter 6.

EMISSION LIMITS

The regulation specifies emission limits (expressed as concentration of chromium) that can typically be achieved by the use of a certain technique to reduce emissions (such as a control device or fume suppressant). The emission limits are presented in Table 4-1. The emission reduction technique that corresponds to the emission limit is shown in parentheses in Table 4- 1.

What is meant by "small"? As shown in Table 4-1, small, existing hard chromium electroplating tanks have a less stringent emission limit to meet than large hard chromium electroplating tanks. A source is considered small by definition if the maximum cumulative potential rectifier capacity of all hard chromium electroplating tanks within the facility is less than 60 million ampere-hours per year.

For example... A facility having both hard chromium electroplating and chromium anodizing tanks ducted to the same control device would only consider the rectifier capacity associated with the hard plating tanks in determining the size. However, a facility having a series of hard plating tanks ducted to a control device in one building and another series of hard plating tanks

TABLE 4-1. EMISSION LIMITS

Affected Tanks	Control level[a]	Control technique
Hard Chromium (Open Surface and Enclosed) Plating Tanks		
Small, existing open surface tanks[b]	0.03 mg/dscm (1.3×10^{-5} gr/dscf)	packed-bed scrubber (PBS)
Large, existing open surface tanks and all new tanks	0.015 mg/dscm (6.6×10^{-6} gr/dscf)	composite mesh-pad (CMP) system
All tanks	Surface tension 45 dynes per centimeter (dynes/cm) by stalagmometer, or 35 dynes/cm by tensiometer	FS that contains wetting agent
Decorative Chromium Plating Tanks Using a Chromic Acid Bath		
All tanks	0.01 mg/dscm (4.4×10^{-6} gr/dscf) or 45 dynes/cm (3.1×10^{-3} lb/ft) by stalagmometer, or 35 dynes/cm by tensiometer	fume suppressants (FS) or FS that contains wetting agent
Decorative Chromium Plating Tanks Using a Trivalent Chromium Bath		
All tanks	Only subject to recordkeeping and reporting	
Chromium Anodizing Tanks		
All tanks	0.01 mg/dscm (4.4×10^{-6} gr/dscf) or 45 dynes/cm (3.1×10^{-3} lb/ft) by stalagmometer, or 35 dynes/cm by tensiometer	FS or FS that contains wetting agent

[a]mg/dscm = milligrams per dry standard cubic meter of exhaust air;
gr/dscf = grains per dry standard cubic feet of exhaust air;
dynes/cm = dynes per centimeter; lb/ft = pound-force per foot.
[b]Small means a facility having a maximum potential rectifier capacity of less than 60 million ampere-hours per year (assuming an operating schedule of 8,400 hours per year and a 70 percent tank utilization) or an actual rectifier capacity of less than 60 million ampere-hours per year demonstrated through the use of non-resettable meters. Existing means installed before 12/16/93 (proposal date of regulation).

ducted to a control device in a different building must consider the total capacity of all tanks in determining size because size must be determined for all hard plating tanks within the facility boundaries.

If the maximum rectifier capacity is 60 million ampere-hours per year, a source may demonstrate that it should be considered small instead of large by using either of the following procedures:

- Using a. non-resettable ampere-hr meter on the tank(s) and keeping monthly records to show that the actual rectifier capacity (based on your facility's actual operating schedule and tank utilization) is below the cutoff, or
- Accepting a federally-enforceable limit on the rectifier capacity (contact your EPA Regional Office or your State or local air pollution control agency for information on how to obtain a federally-enforceable limit).

How do I calculate the maximum cumulative potential rectifier capacity? The maximum cumulative potential rectifier capacity is based on a maximum potential operating schedule of 8,400 hours per year for the facility and assumes that each tank is in operation for 70 percent of the total operating hours.

For example... To calculate the maximum cumulative potential rectifier capacity for a facility, sum the total installed rectifier capacities associated with all hard plating tanks ($\sum C_R$, in amperes) and multiply this sum by 8,400 hours/year and 0.7, as shown below:

$(\sum C_R)(8,400)(0.7)$ = ampere-hours/year

What is meant by "existing"? A tank qualifies as "existing" if it was installed before December 16, 1993, which was the date this regulation was proposed in the Federal Register.

Which control technique should I use to meet the emission limit? As mentioned above, the emission limits are based on the level of control that can be maintained using a certain control technique. However, you may choose to use another control technique, as long as you can meet the emission limit for your type of facility. The following paragraphs discuss the control techniques in Table 4- 1.

Typical control efficiencies are also given in the following paragraphs. But, beware that actual performance levels may vary from these typical values, depending on

such factors as the inlet conditions and how well the control devices are operated and maintained. For more information on how these typical control efficiencies were derived, see Chapters 4 and 5 of EPA's *Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations--Background Information for Proposed Standards (Volume I)* (EPA-453/R-93030a). For information on the availability of this document, see Chapter 10 of this guidebook.

Packed-bed scrubbers are typically used to reduce emissions of chromic acid mist from electroplating and anodizing tanks. Both single and double packed-bed designs are used. Chromic acid mist is removed from the gas stream primarily by droplets impacting on packing media. First, the gas stream is wetted by spraying water countercurrent to the gas flow to enlarge the droplet size. The gas stream then passes through the packed bed(s) where the droplets impinge on the packing media. The regulation requires periodic washing of packing material using an overhead weir.

In most cases, the packed-bed section of the scrubber is followed by a mist eliminator section comprised of a single chevron-blade mist eliminator. The mist eliminator removes any water entrained from the packed-bed section. Treated gases then pass through an induced draft fan and out a stack or exhaust vent. The scrubber water is usually recirculated and periodically tapped and discharged to the electroplating tanks as makeup solution.

Typical efficiencies of packed-bed scrubbers are 97 percent for decorative chromium electroplating and anodizing tanks and 99 percent for hard chromium electroplating tanks. Schematics of a single packed-bed scrubber and a double packed-bed scrubber are provided in Figures 4-1 and 4-2, respectively. Figure 4-3 is a schematic of a chevron-blade mist eliminator.

Composite mesh pads consist of layers of interlocked fibers densely packed between two supporting grids. The composite mesh pad was developed to remove small particles ($< 5\mu$m or 0.2 mils) that were not effectively controlled by conventional technologies.

The layers of material in composite pads are arranged with the smallest diameter fiber layer located in the center of the pad and progressively larger diameter layers located on both sides of the center. Particles collide with the fibers in the pad

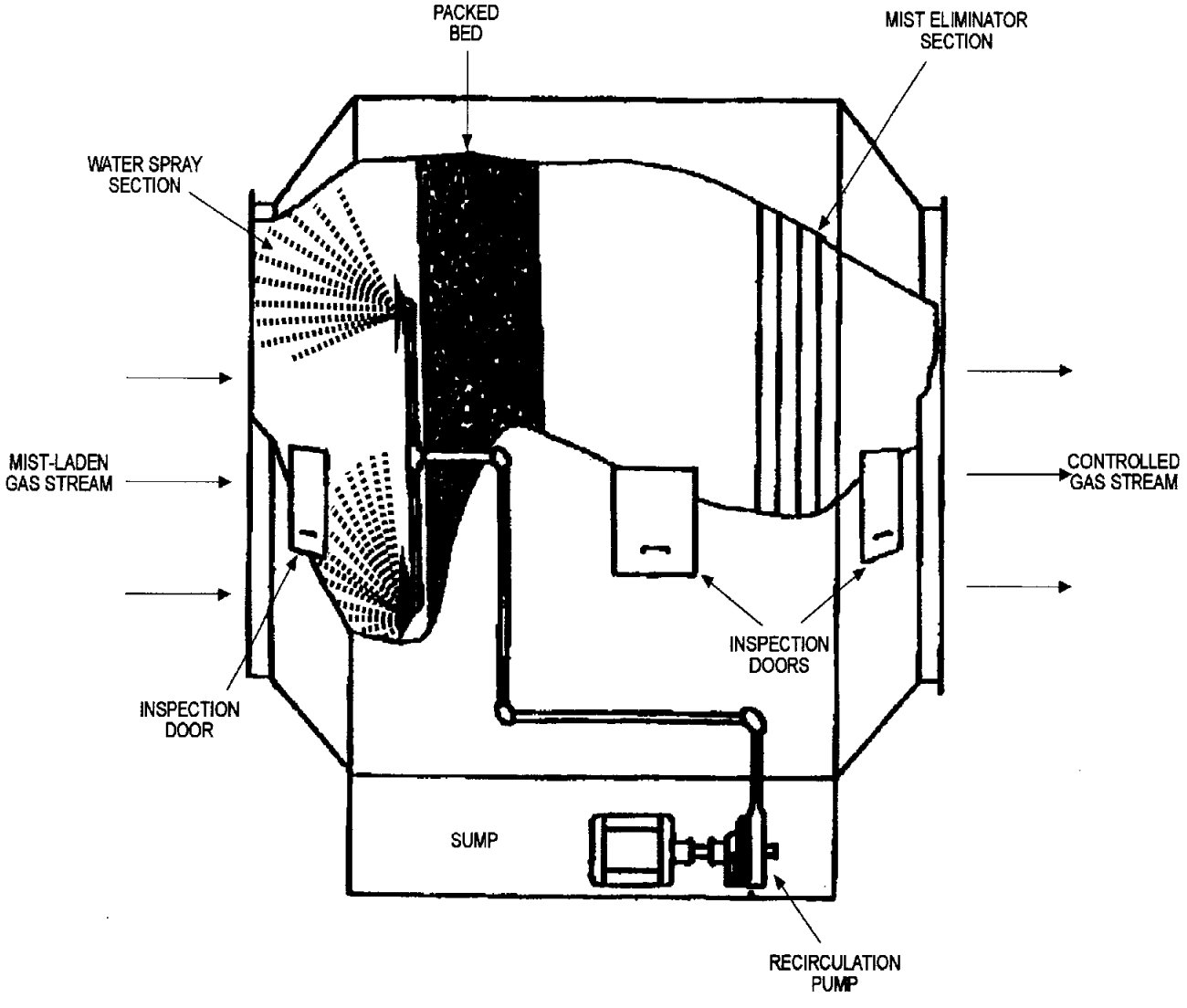

Figure 4-1. Horizontal-flow, Single Packed-Bed Scrubber

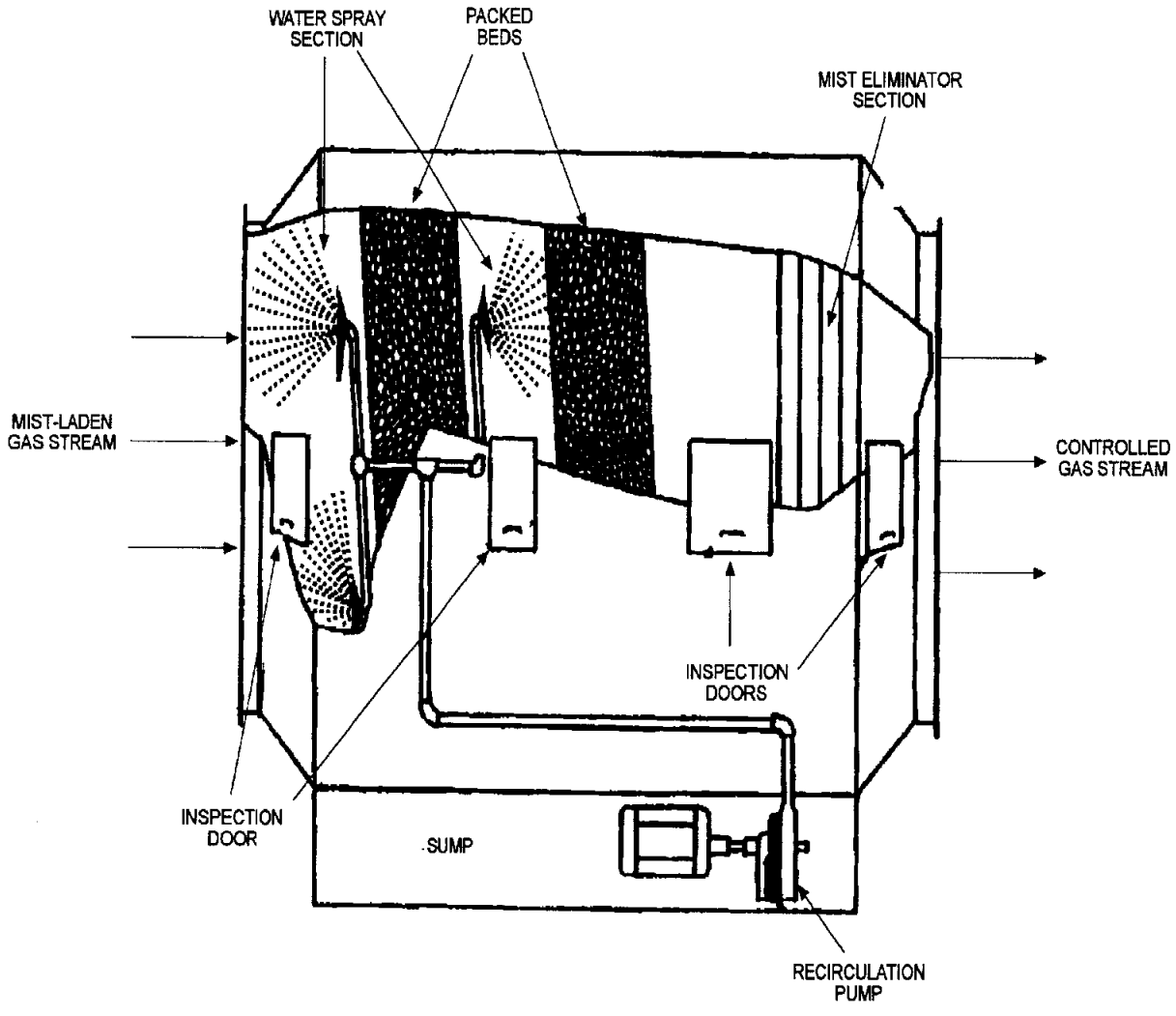

Figure 4-2. Horizontal-flow, Double Packed-Bed Scrubber

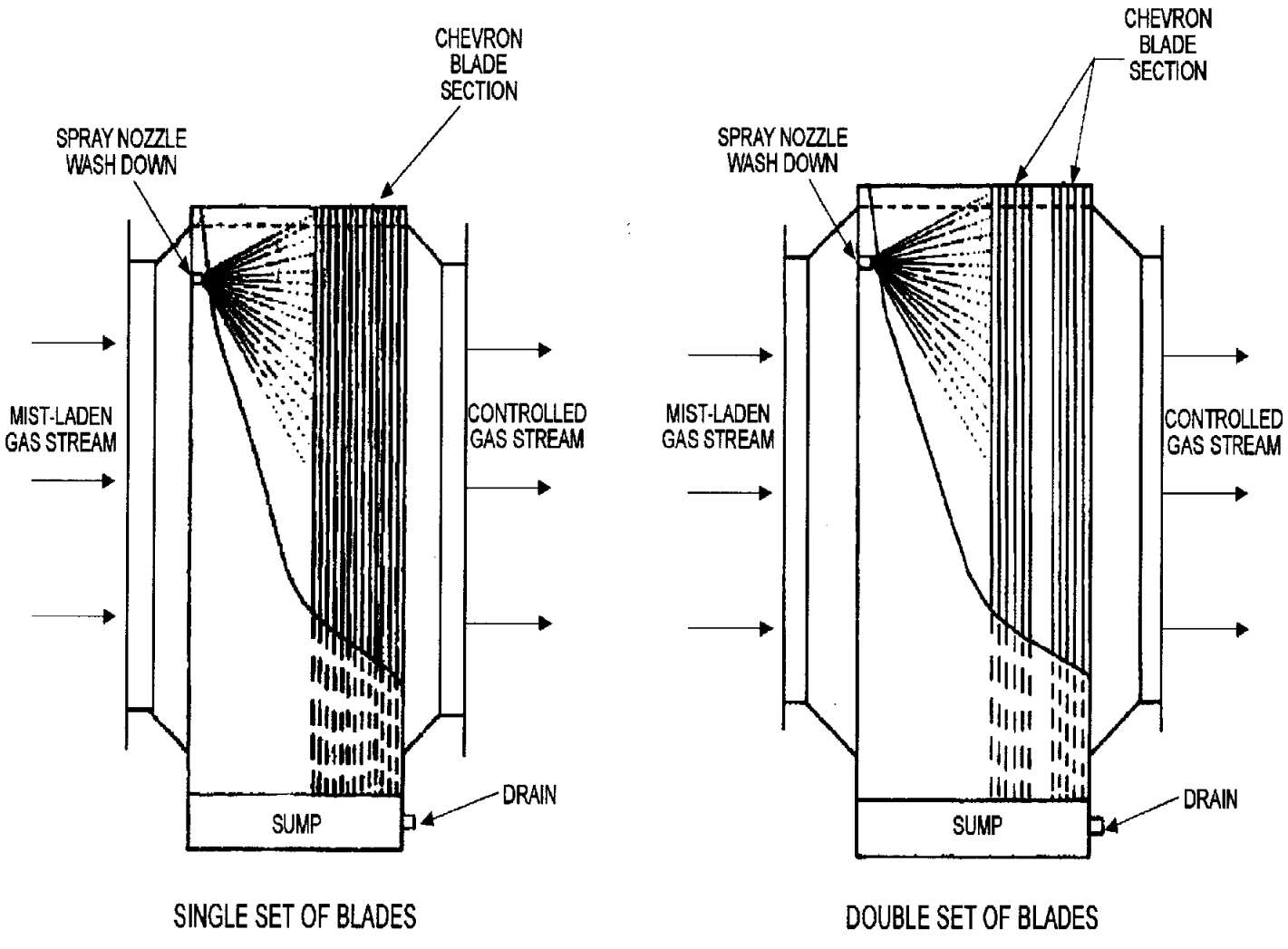

Figure 4-3. Horizontal-flow, Chevron-Blade Mist Eliminator With a Single Set of Blades

and adhere to their surfaces. These captured particles coalesce into larger droplets as they travel through the small-diameter fiber layers in the center of the pad. These enlarged particles either drain to the bottom of the unit or are re-entrained in the gas stream. The re-entrained particles are then captured by the large-diameter fiber layers in the back of the pad. A schematic of a typical composite mesh-pad is provided in Figure 4-4.

Composite mesh-pad systems incorporate a larger particle removal system prior to the composite mesh pad to reduce the plugging potential of the pad. The large particle removal system can either be a series of larger diameter mesh pads or a packed-bed scrubber section.

Typical removal efficiencies associated with this control device are greater than 99 percent.

Fume suppressants are compounds that are added directly to the bath to reduce or inhibit misting. Fume suppressants include: wetting agents, foam blankets, and combinations that include both a wetting agent and a foam blanket. An important distinction between wetting agents and foam blankets is how they reduce emissions. Wetting agents reduce or inhibit misting by lowering the surface tension of the bath. When the surface tension of the solution is reduced, gases escape at the surface of the solution with less of a "bursting" effect, forming less mist. Foam blankets do not preclude the formation of chromic acid mist, but rather trap the mist formed under a blanket of foam. The foam blanket is formed by agitation produced by the hydrogen and oxygen gas bubbles generated during electroplating. Once formed, the foam blanket is usually maintained at a thickness of 1.3 to 2.5 cm (0.5 to 1.0 in.) and covers the entire surface of the bath.

Fume suppressants typically reduce chromium emissions by more than 99 percent.

What if I want to use a different control technique? You may use another control technique, as long as you meet the emission limit for your type of facility. You do not need EPA approval to choose another technique; however, you must get EPA approval on the monitoring parameters and test methods that you will use. An example of another control technique that may be used is the fiber-bed mist eliminator, which is described below.

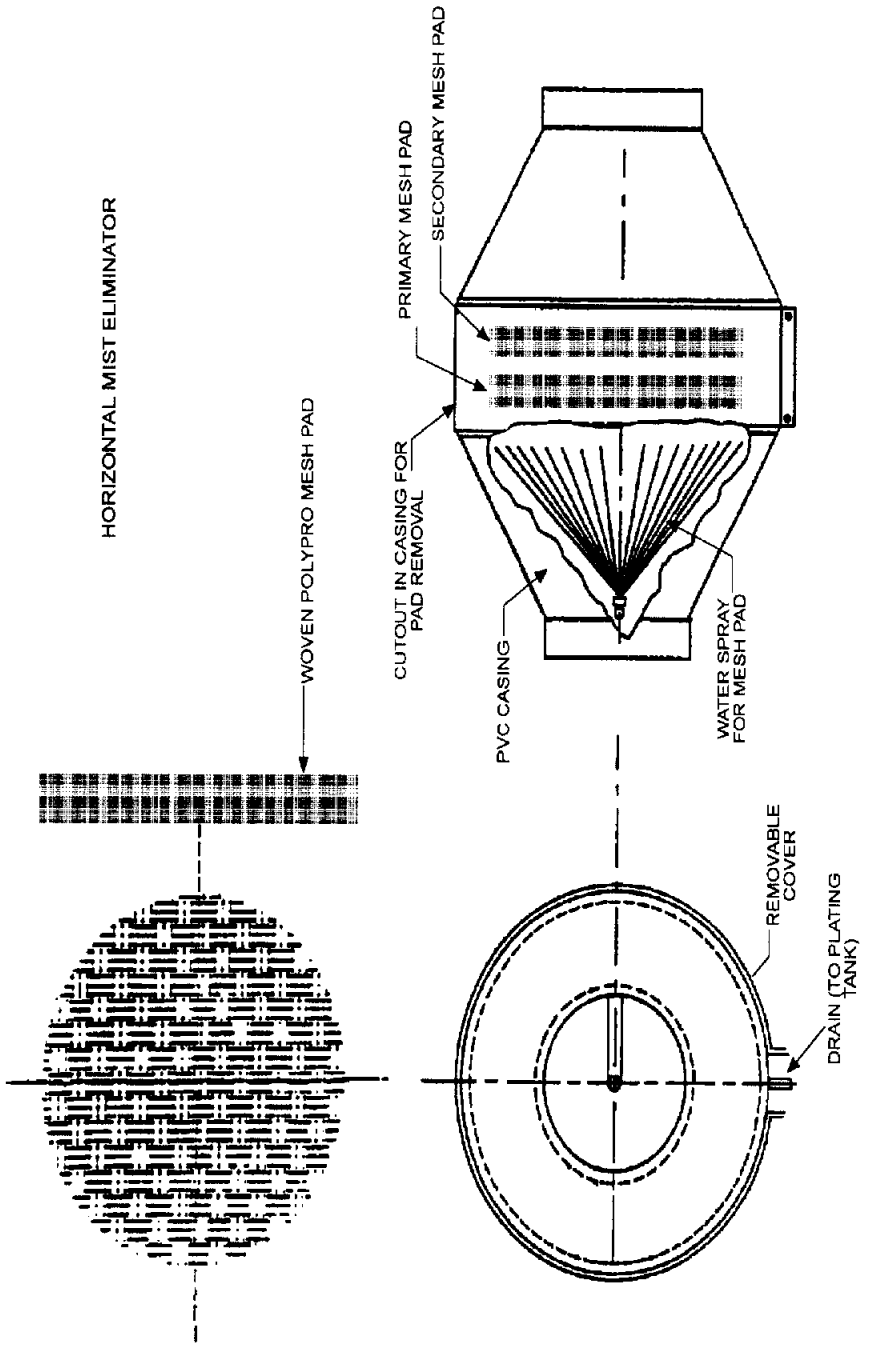

Figure 4-4. Mesh-Pad Mist Eliminator

Fiber-bed mist eliminators mostly have been used to reduce acid mists from sulfuric, phosphoric, and nitric acid plants. These systems remove contaminants from a gas stream through the mechanisms of inertial impaction and Brownian diffusion. Fiber-bed units are designed for horizontal, concurrent gas-liquid flow through the bed. The contaminated gas stream flows toward the downstream face of the bed. The acid mist in the gas stream impacts on the surface of the fibers and drains down the outer face of the bed to the sump while the cleaned gas flows up and out the top of the unit. A schematic of a typical fiber-bed mist eliminator is presented in Figure 4-5. Fiber-bed mist eliminators are typically installed downstream of an existing control system.

The upstream device removes the majority of the emissions and thus prevents plugging of the fiber bed.

Adequate test data are not available to accurately quantify the control efficiency of fiberbed mist eliminators. However, EPA believes that these systems can achieve the emission limits that were based on the use of composite mesh-pad systems and fume suppressants based on qualitative data available.

WORK PRACTICES

Besides complying with the emission limits discussed above, you will also be required to perform work practice standards. Work practice standards are required to ensure that the control technique you use to comply with the regulation is property maintained. Poor maintenance could result in system degradation over time, and eventually lead to an increase in emissions. Work practice standards must be performed quarterly in most cases. The requirements vary slightly depending on which control device you use, as shown in Table 4-2.

In addition to these work practices, you will also be required to write an operation and maintenance (O&M) plan for your facility. (Decorative chromium electroplating operations that use a trivalent chromium bath do not have to prepare an O&M plan.) The O&M plan must be developed and implemented by the compliance date for your facility. However, you do not have to submit your plan to EPA

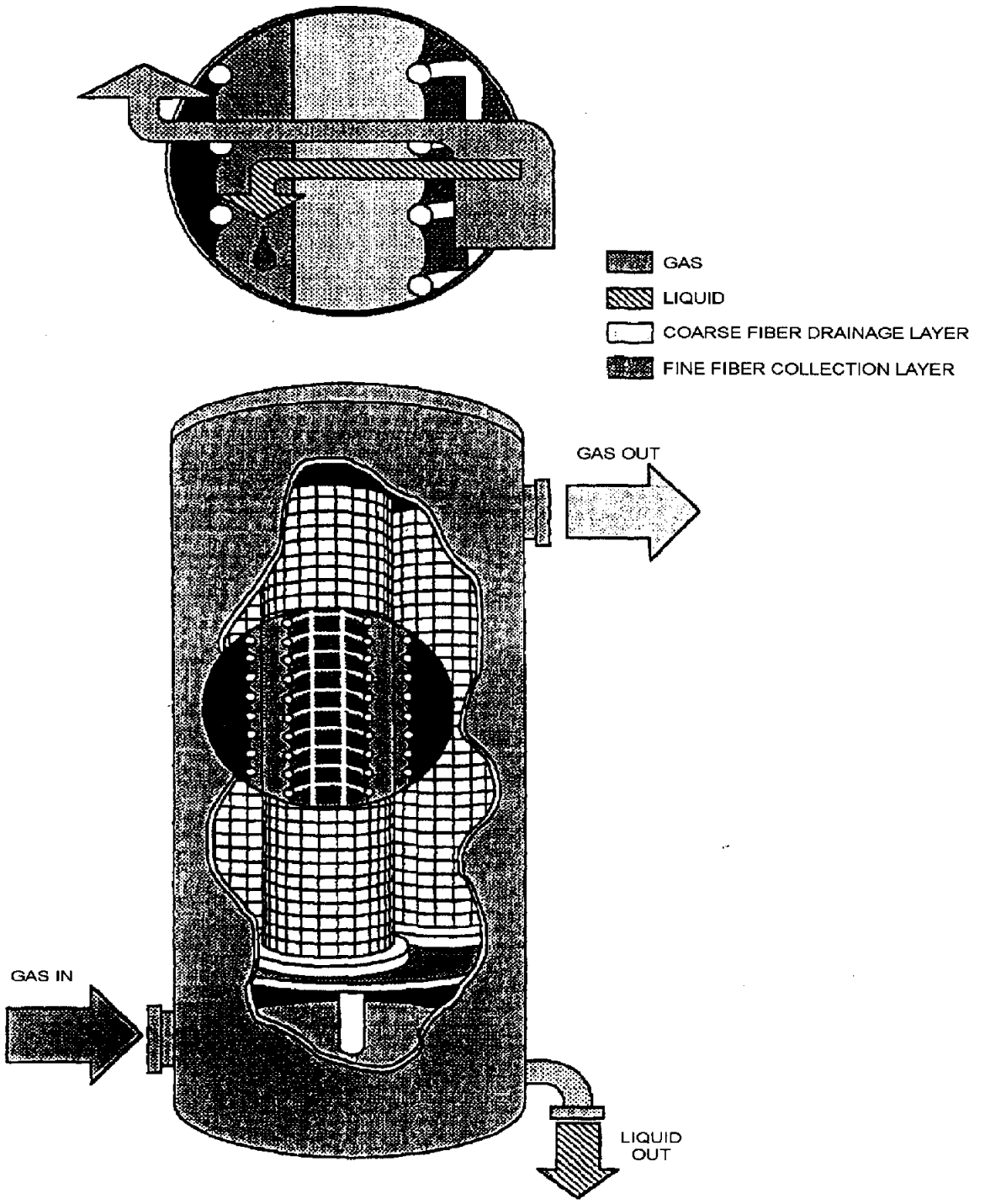

Figure 4-5. Schematic of a Typical Fiber-Bed Mist Eliminator

TABLE 4-2. SUMMARY OF WORK PRACTICE STANDARDS

Control Technique	Work practice standards	Frequency
Packed-bed scrubber (PBS)	Visually inspect device to ensure there is proper drainage, no chromic acid buildup on the packed beds, and no evidence of chemical attack on the structural i tegrity of the device.	1 /quarter
	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.	1/quarter
	Visually inspect ductwork from tank or tanks to the control device to ensure there are no leaks.	1/quarter
	Add fresh makeup water to the top of the packed bed [a,b]	Whenever makeup is added
Composite mesh-pad (CMP) system	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.	1/quarter
	Visually inspect back portion of the mesh pad closest to the fan to ensure there is no breakthrough of chromic acid mist.	1/quarter
	Visually inspect ductwork from tank or tanks to the control device to ensure there-are-no leaks	1/quarter
	Perform washdown of the composite mesh-pads in accordance with manufacturer's recommendations.	Per manufacturer
PBS/CMP system	Same as for CMP system.	Same as for CMP system
Fiber-bed mist eliminator[c]	Visually inspect fiber-bed unit and prefiltering device to ensure there is proper drainage, no chromic acid buildup in the units, and no evidence of chemical attack on the structural integrity of the devices	1 /quarter
	Visually inspect ductwork from the tank(s) to the control device to nsure there are no leaks.	1/quarter
	Perform washdown of fiber elements in accordance with manufacturer's recommendations.	Per manufacturer

TABLE 4-2. SUMMARY OF WORK PRACTICE STANDARDS (continued)

Monitoring equipment	Work practice standards	Frequency
Other air pollution control device (APCD)	To be proposed by the source for approval by the Administrator.	Proposed by the source for approval by the Administrator
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.	1/quarter
Stalagmometer[d]	Follow manufacturers recommendations.	Per manufacturer
Tensiometer[d]	Follow manufacturers recommendations.	Per manufacturer

[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 packing 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.

[d]Device used to measure the surface tension of the bath.

The O&M plan will include:

- Descriptions of the control device and monitoring equipment in use;
- A checklist to document the operation and maintenance of the equipment (see Appendix C of this guidebook, Operation and Maintenance Checklist, for an example checklist);
- A list of the work practice standards from Table 4-2 that apply to your facility;
- Procedures to follow to ensure that equipment or process malfunctions due to poor maintenance or other preventable conditions do not occur; and
- Procedures for identifying malfunctions and for implementing corrective actions.

You may use any standard operating procedure (SOP) manuals, vendor O&M manuals, Occupational Safety and Health Administration (OSHA) plans, or other existing plans as part of your O&M plan, as long as they meet the criteria in the regulation.

CHAPTER 5

HOW WILL I DEMONSTRATE COMPLIANCE?

There are three components to demonstrating compliance with the emission limits of this regulation:

- Initial performance testing
- Ongoing compliance monitoring
- Special compliance provisions

INITIAL PERFORMANCE TESTING

What is the purpose of the initial performance test? There are two reasons to perform an initial performance test. First, an initial performance test is necessary to determine if the chromium emissions from the affected source are the same or lower than the emission limits set for the source. The emission limits for the different chromium electroplating tanks and chromium anodizing tanks were listed in Table 4-1. Second, the initial performance test establishes values or ranges of values for the air pollution control system operating parameters. Monitoring and recording these operating parameters during tank operation will give you an indication of whether or not you are in compliance with the emission limits.

Summary of testing requirements. Except for the situations noted below, you will be required to perform an initial performance test. This test must be conducted by July 23, 1996 for decorative chromium electrplaters and by July 24, 1997 for hard (open surface and enclosed) chromium electroplaters and chromium anodizers.

However, sources that meet the following criteria do not have to perform testing:

- Decorative chromium electroplating tanks, hard (open surface and enclosed) chromium electroplating tanks, or chromium anodizing tanks that use a wetting agent and limit the surface tension of the bath to a maximum of 45 dynes/cm by stalagmometer, or 35 dynes/cm by tensiometer; and
- Decorative chromium electroplating tanks that use a trivalent chromium bath.

A test plan that describes the proposed initial performance testing program should be developed prior to testing and may be requested by EPA. The test plan should

describe the process to be tested, the conditions under which testing is to be conducted, the sampling locations, and the test methods to be used. Also, you must notify EPA in writing of your intent to conduct a performance test prior to the test. This notification is described in Chapter 6 of this guidebook.

The performance test report is prepared by the test contractor after testing has been conducted. The test report must contain the information listed in Table 5-1 and must be submitted to EPA as part of the reporting requirements described in Chapter 6 of this guidebook.

Test methods. EPA Reference Method 306 or 306A, "Determination of Chromium Emissions from Decorative and Hard Chromium Electroplating and Anodizing Operations," must be used to determine chromium emissions from decorative or hard chromium electroplating tanks or chromium anodizing tanks. Detailed descriptions of these reference methods are located in Appendix A of part 63 of the Code of Federal Regulations. The EPA produced a videotape on stack sampling and monitoring entitled "Construction and Operation of the EPA Method 306A Sampling Train and Practical Suggestions for Monitoring of Electroplating and Anodizing Facilities" that is available to you for a nominal fee through North Carolina State University, Raleigh, NC by calling (919) 515-5875.

The California Air Resources Board (CARB) Method 425 may also be used to measure chromium emissions as long as the analytical requirements listed in the regulation are adhered to. Alternate test methods may also be used as long as they have been validated using EPA Reference Method 301.

EPA Reference Method 306B, "Surface Tension Measurement and Recordkeeping for Tanks Used at Decorative Chromium Electroplating and Anodizing Facilities must be used to determine the surface tension of electroplating and anodizing baths if you are complying with the surface tension limit rather than the emission limit.

Monitoring requirements. During performance testing, applicable air pollution control system operating parameters must be recorded. These operating parameters are determined by the air pollution control system you are using and are listed in Table 5-2.

TABLE 5-1. INFORMATION REQUIRED IN INITIAL PERFORMANCE TEST REPORT

- Process description
- Sampling location descriptions
- Sampling and analysis procedures and any modifications to standard procedures
- Test results
- Quality assurance procedures and results
- Records of. operating conditions during testing preparation of standards calibration procedures
- Raw data sheets for field sampling, and field and laboratory analyses
- Documentation of calculations
- Any additional information required by the test method

TABLE 5-2. METHODS USED TO ESTABLISH OPERATING PARAMETER VALUES

Monitored parameter	Applicable air pollution control systems	Method used to establish acceptable values
Pressure drop	Packed-bed scrubber Fiber-bed mist eliminator	1. Range of values from multiple performance tests, or 2. $\pm$ 1 inch of H_20 column about the average pressure drop measured during three compliant test runs
Pressure drop	Composite mesh-pad system	1. Range of values from multiple performance tests, or 2. $\pm$ 2 inch of H_20 column about the average pressure drop measured during three compliant test runs
Velocity pressure	Packed-bed scrubber	1. Range of values from multiple performance tests, or 2. + 10 percent above the average velocity pressure measured during three compliant test runs
Surface tension	Wetting agent	1. Use 45 dynes/cm (if using a stalagmometer), 2. Use 35 dynes/cm (if using a tensiometer), or 3. Maximum surface tension measured during at least three compliant test runs
Foam blanket thickness	Foam blanket Fume suppressant	1. Use 1 inch foam blanket thickness, or 2. Minimum foam blanket thickness measured during at least three compliant test runs

Test methods. EPA Reference Method 306 or 306A, "Determination of Chromium Emissions from Decorative and Hard Chromium Electroplating and Anodizing Operations," must be used to determine chromium emissions from decorative or hard chromium electroplating tanks or chromium anodizing tanks. Detailed descriptions of these reference methods are located in Appendix A of part 63 of the Code of Federal Regulations. The EPA produced a videotape on stack sampling and monitoring entitled "Construction and Operation of the EPA Method 306A Sampling Train and Practical Suggestions for Monitoring of Electroplating and Anodizing Facilities" that is available to you for a nominal fee through North Carolina State University, Raleigh, NC by calling (919) 515-5875.

The California Air Resources Board (CARB) Method 425 may also be used to measure chromium emissions as long as the analytical requirements listed in the regulation are adhered to. Alternate test methods may also be used as long as they have been validated using EPA Reference Method 301.

EPA Reference Method 306B, "Surface Tension Measurement and Recordkeeping for Tanks Used at Decorative Chromium Electroplating and Anodizing Facilities must be used to determine the surface tension of electroplating and anodizing baths if you are complying with the surface tension limit rather than the emission limit.

Monitoring requirements. During performance testing, applicable air pollution control system operating parameters must be recorded. These operating parameters are determined by the air pollution control system you are using and are listed in Table 5-2. At the conclusion of testing, a range of acceptable values or a maximum or minimum value for these parameters can be established as described below.

For pressure drop measurements, the range can be established as the range of pressure drops measured during multiple performance tests, or as plus or minus 1 inch (or 2 inches for a composite mesh-pad system) of water column about the average pressure drop measured during three compliant test runs (i.e., the source was at or below the applicable emission limit).

For velocity pressure measurements, the range can be established as the range of velocity pressures measured during multiple performance tests, or as plus or minus

TABLE 5-3. SUMMARY OF ONGOING MONITORING REQUIREMENTS

Air pollution control system	Monitored parameter[a]	Monitoring frequency
Composite mesh-pad system	Pressure drop across system	Daily
Packed-bed scrubber	Pressure drop across system	Daily
	Velocity pressure at system inlet	Daily
Packed-bed scrubber/composite mesh-pad system	Pressure drop across the mesh-pad system	Daily
Fiber-bed mist eliminator	Pressure drop across the mist eliminator	Daily
	Pressure drop across the control device located upstream of the fiber bed that prevents plugging	Daily
Wetting agent or combination wetting agent/foam blanket fume suppressants	Surface tension	Every 4 hours[b,c]
Foam blanket-type fume suppressants	Foam blanket thickness	Every hour[c,d]
Fume suppressant/add-on control device	As identified above	

[a]Acceptable values for these monitored parameters are established during initial performance testing.

[b]If there are no exceedances of the maximum surface tension after 40 hours of operation, then the monitoring frequency can be decreased to once every 8 hours. If there are no exceedances for the next 40 hours, then the frequency can be decreased to once every 40 hours. If an exceedance occurs at any time after that, then the initial monitoring schedule (every 4 hours) must be resumed.

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

[d]If there are no exceedances of the minimum foam blanket thickness after 40 hours of operation, then the monitoring frequency can be decreased to once every 4 hours. If there are no exceedances for the next 40 hours, then the frequency can be decreased to once every 8 hours. If an exceedance occurs after that, then the initial monitoring schedule (every hour) must be resumed.

10 percent about the average velocity pressure measured during three compliant test runs.

For surface tension, a maximum value can be established during performance testing, or you can forego testing (if you have a decorative or hard chromium electroplating or a chromium anodizing operation) and accept 45 dynes/cm (by stalagmometer) or 35 dynes/cm (by tensiometer) as the maximum surface tension value. For foam blanket thickness, a minimum foam blanket thickness can be established during performance testing or the facility can elect to use 1 inch as the minimum foam blanket thickness.

Applicability of previous test results. If you have already conducted a performance test to obtain an operating permit in your State, the results of the testing can be used to demonstrate compliance with this regulation only if each of the following criteria is demonstrated:

- the appropriate test methods were used; the test was conducted under representative operating conditions;
- the test report contains the elements listed in Table 5-1;
- the test was December 1991; and
- you developed sufficient monitoring data to establish the operating parameter values that correspond to compliance with the emission limits.

If any of these criteria are not met, then you will have to retest.

ONGOING COMPLIANCE MONITORING

What is the purpose of ongoing monitoring? You must continue to monitor the operation of the air pollution control system to ensure ongoing continuous compliance with the emission limits. By monitoring and recording the appropriate air pollution control system parameters and comparing the monitored values to the range of values, maximum value, or minimum value established during the performance test, you and the enforcing agency can determine if you are in compliance with the emission limits.

How do I know if I am out of compliance with the emission limits? Monitored values that fall outside of the range of values established for pressure drop and velocity pressure, exceed the maximum surface tension, or fall below the minimum foam blanket thickness indicate that the tank is out of compliance with the emission limits (i.e., excess emissions). Table 5-3 summarizes the ongoing monitoring requirements including the

monitoring frequency for the various air pollution control systems.

Can I decrease the monitoring frequency of monitored values? The monitoring frequency for pressure drop and velocity pressure cannot be changed. However, the frequency of monitoring surface tension and foam blanket thickness can be decreased. Figure 5-1 is a flowchart showing how the monitoring frequency can be decreased for a wetting agent, a combination wetting agent/foam blanket-type fume suppressant, or a foam blanket-type fume suppressant. The information in Figure 5-1 is also described in the footnotes to Table 5-3.

SPECIAL COMPLIANCE PROVISIONS

The regulation contains special compliance provisions for determining compliance with the emission limits under certain circumstances. These special compliance provisions are applicable in the following situations involving multiple tanks manifolded to one control system:

- 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 emission limits (e.g., hard chromium electroplating and anodizing) or hard chromium tanks subject to different emission limits (e.g., a new tank and an existing small tank), which may or may not be controlled with nonaffected sources.

In these situations, it would be very difficult to directly determine compliance with the emission limits in the regulation. Therefore, Section 63.344(e) of the final regulation provides equations for verifying compliance with the emission limits in both of these situations.

CHAPTER 6

WHAT RECORDKEEPING AND REPORTING WILL I NEED TO DO?

RECORDKEEPING

The regulation requires that you keep records to document compliance status with the regulation. These records include:

- Inspection and maintenance records
- Malfunction records
- Performance test results
- Monitoring data records
- Excess emissions records
- Process records
- Miscellaneous records

The recordkeeping requirements are described below.

Inspection and maintenance records. Table 4-3 lists the various work practice standards that apply to air pollution control systems and monitoring equipment and the frequency with which these practices are to be conducted. Records must be maintained to show that the work practices were conducted on schedule. The records can take the form of a checklist; an example checklist for a composite mesh-pad system is provided in Appendix C of this guidebook. Also, records of all maintenance performed on the process, air pollution control system, and monitoring equipment must also be maintained; these records could take the form of contractor invoices that describe the work or simply handwritten descriptions of the maintenance performed.

Malfunction records. Records of the occurrence, duration, and cause of any malfunction of the process, air pollution control device, and monitoring equipment must be maintained. If the actions required to correct the malfunctions were consistent with those described in the operation and maintenance (O&M) plan, then records of these actions need not be maintained. However, records of the actions taken to correct the malfunction when the actions are inconsistent with the O&M plan must be maintained, and the plan must be revised accordingly.

An example of a control device malfunction is the settling of packing material in a packed-bed scrubber. After the initial installation of the unit, the packing material settles which sometimes opens up a gap in the top of horizontal flow units. Settling of the packing material should be

indicated by a loss in pressure drop across the unit because the air flow is following the path of least resistance and bypassing the packed bed. To correct this problem, additional packing material should be added to the top of the packed bed.

Performance test results. Test reports documenting the results of performance tests conducted on the affected source must be maintained. The test report must contain process and air pollution control system operating parameter measurements obtained during testing as described in Table 5-1. Any additional measurements required for those facilities using a common control system to reduce emissions from multiple sources at a facility should also be included in the test report.

Monitoring data records. Records of the monitoring data used to determine compliance with the emission limits must also be maintained. Table 5-3 lists the monitoring requirements for each of the air pollution control systems. Monitoring data can be recorded on a simple form that identifies the control system, the monitored parameter(s), the value of the monitored parameter(s), and the time and date when the parameter was monitored. An example of a monitoring data form developed for a packed-bed scrubber is provided in Appendix C of this guidebook.

Excess emissions records. Excess emissions occur when the values of the monitored parameters exceed the value or range of values established under the performance test. You must record the start and end times and dates of each period of excess emissions, regardless of the cause of the excess emissions. The example monitoring data form in Appendix C of this guidebook provides a space to record the start and end times of excess emissions episodes.

Process records. All tanks. The process operating time for each chromium electroplating or chromium anodizing tank must be recorded. For those tanks using fume suppressants, the date and time of each addition of fume suppressants must be recorded.

Hard chromium tanks. If you are using the actual rectifier capacity to demonstrate that your facility is "small" (for purposes of the emission limits), then the actual rectifier capacity expended by month and the total capacity expended for the reporting period (semiannual for major

sources and annual for area sources) must be recorded.

Decorative chromium tanks. For decorative chromium electroplating tanks using a trivalent chromium bath, records of the bath components purchased must be maintained with the wetting agent clearly identified as a bath constituent contained in one of the bath components. These records may be invoices showing the bath components (including the wetting agent), quantities purchased, and date of purchase.

Miscellaneous records. You are required to keep a copy of your O&M plan on record. Records that support the reporting requirements described below and that support any petitions to the EPA (e.g,, requests to waive the recordkeeping or reporting requirements of the regulation) must also be maintained.

REPORTING

The regulation requires that sources submit reports and notifications, which include:

- Initial notification
- Notification of construction/reconstruction
- Notification of performance test
- Notification of compliance status
- Ongoing compliance status reports
- Reports associated with trivalent chromium baths

All reports must be submitted to the Administrator, The Administrator is the appropriate Regional Office of the U. S. EPA (as listed in Table 10-1 of this guidebook) or the delegated State or local authority. You may contact the appropriate EPA Regional Office to identify those State or local agencies with delegated authority. The required reports may be sent by U. S. mail, fax, or by another courier (including electronic submission). The reporting requirements and deadlines are described below and illustrated in Figure 6-1.

Initial notifications. If your source has an initial startup date before January 25, 1995 (this would include all existing tanks), you must submit an initial notification to the Administrator on or before July 24, 1995 (180 days after promulgation of the final rule). An example initial notification is provided in Appendix C of this guidebook.

If your source is new or reconstructed and has an initial startup, after January 25, 1995, you must submit an initial notification to the Administrator that provides:

- If construction or reconstruction

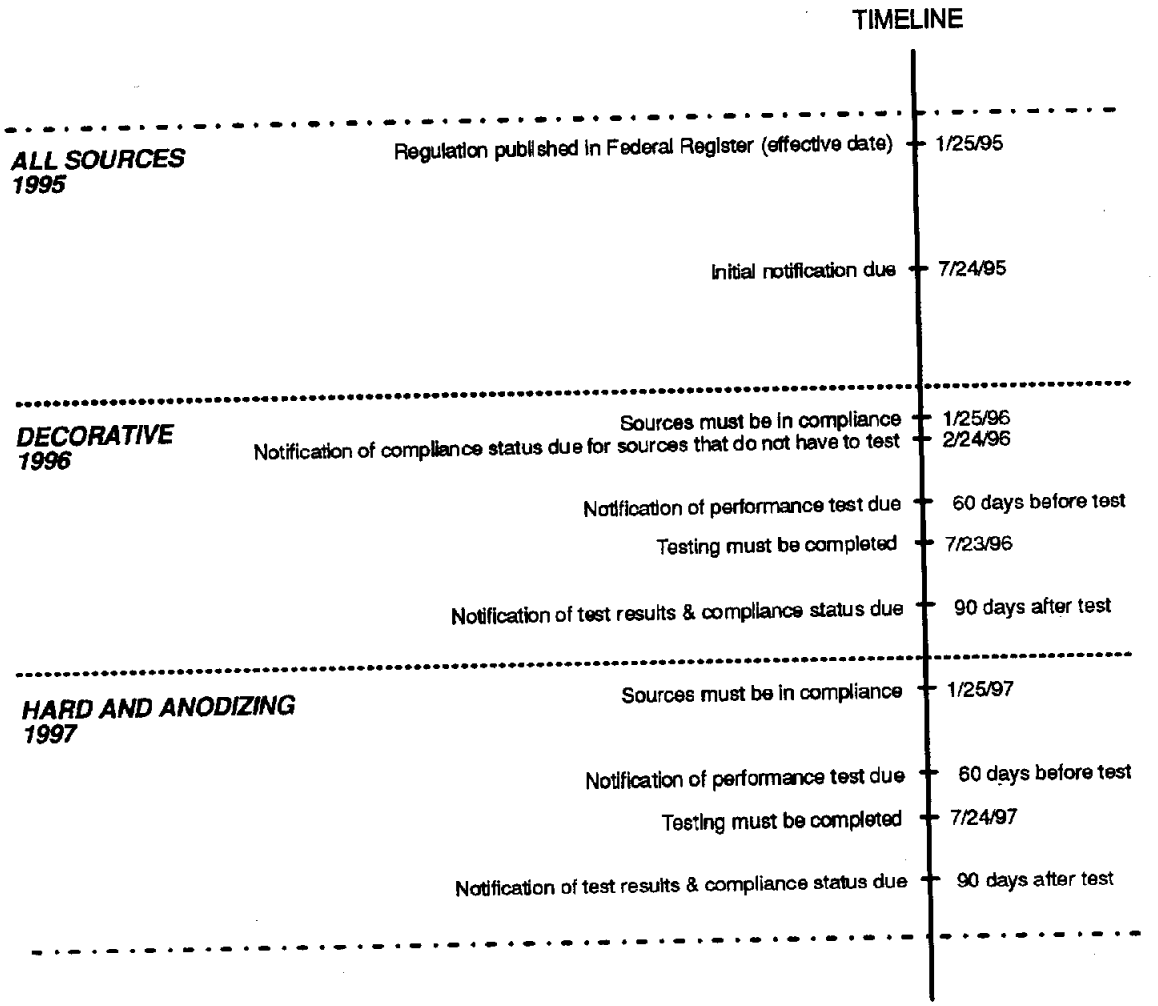

Figure 6-1. Timeline for Reporting Requirements

commenced before January 25, 1995, a notification of the date when construction or reconstruction commenced simultaneously with the notification of construction/reconstruction (described in the next section), or

- If construction or reconstruction commenced after January 25, 1995, a notification of the date when construction or reconstruction commenced within 30 calendar days after the commencement date.

A notification of the actual startup date of the source must be submitted within 30 calendar days after that startup date.

Notification of construction or reconstruction. After January 25, 1995, no one may begin construction or reconstruction of new or reconstructed sources without submitting a notification of construction/reconstruction to the Administrator. Construction or reconstruction may begin as soon as the notification of construction/reconstruction has been submitted; approval by the Administrator is not required. If construction or reconstruction commenced before January 25, 1995, but startup did not occur, then a notification of construction/ reconstruction must be submitted by March 26, 1995. An example form for notification of construction/reconstruction is provided in Appendix C of this guidebook.

Notification of initial performance test. You must notify the Administrator in writing of intent to conduct an initial performance test at least 60 calendar days before the scheduled date of the test to allow the Administrator to have an observer present at the test. The Administrator may or may not choose to have an observer present. An example form for notification of initial performance test is provided in Appendix C of this guidebook.

If the scheduled date for the test is changed for unforeseen reasons, you must inform the Administrator within 5 calendar days of the originally scheduled test date and must specify the date of the rescheduled test.

Notification of compliance status. You must submit a notification of compliance status within 90 days after your initial performance test (if testing is required) or no later than 30 days after your compliance date (if testing is not required). If testing is required, a copy of the test report must be submitted as support for the test results shown (see Table 5-1 for a list of items to be included in the test report). If a title V

permit has not been issued to your source, you should send the notification of compliance status to the Administrator. If a title V permit has been issued, you should send the notification of compliance status to the appropriate permitting authority. An example form for notification of compliance status is provided in Appendix C of this guidebook.

Ongoing compliance status reports for major sources. If your source is located at a major source site, you must submit ongoing compliance status reports to the Administrator every six months. The Administrator may decide on a case-by-case basis to require a source to submit ongoing compliance status reports more frequently. Additionally, if a source experiences exceedances of the emission limits as indicated by ongoing monitoring of air pollution control system operating parameters, then the source will be required to submit quarterly reports. An example form for reporting ongoing compliance status is provided in Appendix C of this guidebook.

Reduced reporting frequency. A source that is required to submit ongoing status reports on a quarterly or more frequent basis may reduce the frequency of reporting to semiannual if the following conditions are met:

- the ongoing compliance status reports show that the source is in compliance for a full year (e.g., four quarterly or 12 monthly reporting periods);
- the source complies with all applicable recordkeeping and monitoring requirements; and
- the Administrator does not object to a reduced reporting frequency.

To reduce the reporting frequency, the source must notify the Administrator of its intention to make the change. This notification can take the form of a simple letter to the Administrator that describes the initial exceedance (that caused the source to have to report more frequently), any actions taken to address the exceedance, the subsequent period of compliance (at least 1 year), and the intention of the owner/operator to reduce the frequency of submittals of ongoing compliance status reports. The Administrator may review all previously submitted reports or records kept by the source to make a judgement on whether the reduced frequency request should be approved. Approval is

automatically granted if the Administrator does not issue a notice of disapproval within 45 days after the request is submitted.

Ongoing compliance status reports for area sources. The owner/operator of an affected area source must also prepare ongoing compliance status reports that contain the same information described above for major sources. The reports must be prepared annually and retained onsite and must be made available to the Administrator on request. The example form for an ongoing compliance status report provided in Appendix C of this guidebook may be used to fulfill this requirement.

However, if both of the following conditions are met, then semiannual reports must be prepared and submitted to the Administrator:

- the total duration of excess emissions (as indicated by monitoring data) is 1 percent or greater of the total operating time for the reporting period, and
- the total duration of malfunctions of the add-on air pollution control equipment and monitoring equipment is 5 percent or greater of the total operating time.

Regardless if these conditions are met, the Administrator or the permitting authority may choose to require that ongoing compliance status reports be completed more frequently (e.g., semiannually) and be submitted.

An area source may petition the Administrator (as described above for major sources) to reduce the frequency of reporting and/or retain the required reports onsite.

Reports associated with trivalent chromium baths. If you use a trivalent chromium bath, you must submit the following reports instead of the reports described above:

- By July 24, 1995, an initial notification (Appendix C of this guidebook provides an example initial notification report), and
- By February 24, 1996, a notification of compliance status that updates the information in the initial notification or a statement that the initial notification is still accurate.

If you decide to change your process (e.g., from using a trivalent chromium process to using a hexavalent chromium process because of problems with the plating quality), you must submit a report within 30 days after the change that includes:

- a description of the change and any

change in the emission limit, and

- if a different emission limit applies,

the information required in the initial notification described above.

In addition, you must submit all other applicable notifications described above according to the schedules shown.

CHAPTER 7

WHAT ARE MY POLLUTION PREVENTION OPTIONS?

What is Pollution Prevention? As stated in the Pollution Prevention Act of 1990, Congress has declared it to be the nation's policy that, wherever feasible, pollution should be prevented or reduced at the source. The Act states that source reduction is more desirable than waste management and pollution control. Source reduction is defined as any practice that reduces the amount of any hazardous substance entering the waste stream or otherwise released into the environment prior to recycling, treatment, or disposal. Therefore, you must also consider wastewater, hazardous waste, and solid waste effects and regulations as well as air in selecting any method of control.

What are my options? This regulation allows for pollution prevention measures to be used when complying with the requirements of the regulation. There are two source reduction alternatives available. The first is the use of chemical fume suppressants to inhibit chromium emissions at the source--the electroplating or anodizing tank. The second source reduction technique involves the use of a trivalent chromium electroplating process instead of the traditional hexavalent chromium (chromic acid) process.

Even though add-on pollution control measures are not considered source reduction measures, the add-on pollution control techniques described in the regulation (i.e., composite meshpad systems and packed-bed scrubbers) have a pollution prevention aspect. These pollution control measures allow closed-loop recycling of all collected chromium as well as concentration of process rinsewaters for some decorative chromium plating operations.

Which method should I use? There are advantages and disadvantages associated with each pollution prevention method that you should consider before selecting a method. The advantages and disadvantages are summarized below. In general, the advantages of a method and the benefits of pollution prevention to the owner or operator outweigh the disadvantages.

Fume suppressants. Fume suppressants are used widely and effectively

in decorative chromium electroplating and chromic acid anodizing operations and less frequently in hard chromium electroplating operations. The disadvantages of using fume suppressants are:

- some wetting agents have a tendency to aggravate pitting, and
- foam blankets that are too thick entrap hydrogen gas, which poses an explosion hazard.

The advantages of using fume suppressants are:

- minimization of plating solution evaporation losses;

a very low-cost of chromium emission control;

- no impact on energy consumption; and
- no impact on solid waste generation.

Trivalent chromium process. Trivalent chromium processes are very effective in reducing chromium emissions from decorative chromium electroplating operations. Disadvantages of using trivalent chromium processes are:

- careful rinsing is required to minimize bath contamination;
- the finish of satin nickel may appear more gray than blue; and
- post treatment may be required to passivate unplated areas for corrosion resistance.

While there are some disadvantages and problems associated with the use of trivalent chromium processes, most can be overcome with process adjustments (e.g., careful rinsing to minimize bath contamination). The advantages of using trivalent chromium processes are:

- lower toxicity than hexavalent chromium;
- reduced waste disposal problems and costs compared to use of hexavalent chromium;
- provides better covering and throwing power than hexavalent chromium;
- eliminates "burning;" and
- provides enhanced corrosion resistance compared to hexavalent chromium.

CHAPTER 8

HOW DOES THIS REGULATION RELATE TO OTHER FEDERAL AND STATE OR LOCAL REQUIREMENTS?

PERMITTING

Will I need a permit? The final chromium electroplating regulation that was published in the Federal Register on January 25, 1995 required all sources, major and nonmajor (i.e., area), to obtain a title V operating permit. Under title V, all major sources are required to obtain permits--no deferrals or exemptions are allowed for these major sources.

However, EPA later granted permitting authorities the option of deferring title V permitting of area source chromium electroplaters until December 9, 1999. Subsequently, EPA extended the period during which deferrals could occur until December 9, 2004. By that date, the EPA was to make a decision as to whether to require title V operating permits, or to permanently exempt area source chromium electroplaters. The EPA exempted area source decorative chrome electroplaters using fume suppressants or wetting agents from title V permits at the time it issued the original option for deferral of area sources. **[NOTE: As of August 2004, the EPA had not yet published in the Federal Register its intentions concerning the permitting of area sources. You need to contact your title V permitting authority to determine the status of title V permitting requirements for your area source chromium electroplater.]**

Title V Operating permit program. Title V of the CAA Amendments of 1990 required the establishment of State-implemented operating permit programs with Federal oversight. Prior to the 1990 amendments, sources were not required by Federal law to obtain operating permits for air emissions. However, many States issued their own operating permits to certain sources. You may have been required to obtain an operating permit for your facility under a State permit program in the past. Now, you may be required to obtain a title V operating permit.

Permit requirements in general. The operating permit program will incorporate all applicable Federal CAA regulation requirements and any State or local government requirements. Therefore, permit

requirements will be at least as stringent as requirements mandated by the Federal CAA regulations (e.g., the chromium emission standards for electroplaters).

The basic format of operating permits is detailed (codified) in a new part 70 of title 40 of the *Code of Federal Regulations* (40 CFR part 70). Owners or operators of facilities subject to Federal CAA regulations will have to:

- submit a permit application;
- submit compliance plans and schedules;
- comply with all applicable air emission limits and standards listed in the permit (e.g., the chromium emission standards for electroplaters);
- monitor actual emissions,
- submit monitoring reports, and make an annual certification of the source's compliance status;
- submit. applications for any permit modifications;
- submit applications for permit renewals every 5 years; and
- pay a permit or emission fee.

States are allowed to develop one general permit to cover similar small businesses or industrial processes. Thus, States may choose to develop a "general permit" that would cover chromium electroplating and anodizing facilities. The EPA is currently developing a model general permit for this source category.

Does my State have a permitting program? All States must develop a title V operating permit program. States were required to submit their permitting programs to EPA for approval by November 15, 1993. One year later, the EPA was to have approved the States' permitting programs and authorized the States to administer their programs. The EPA's Technology Transfer Network (TTN), an electronic bulletin board system, has the latest status of permit program submittals and approvals. (See Chapter 10 for instructions on how to access the TTN.) You may also contact your State or local air pollution control agency for more information on the status of your State's title V operating permit program.

If a State does not develop an acceptable title V operating permit program, the EPA will implement a Federal permit program for sources in that State.

When do I apply for my operating permit? Your deadline for submitting a title V operating permit application will depend on when your State or local title V

permitting program is approved by the EPA. In general, your application will be due within 12 months after this approval date. However, some State and local permitting authorities have shorter deadlines. Regardless, you will be required to submit your application by November 15, 1996 at the latest because title V requires either a Federal or State program to be in place by November 15, 1995. Once you have your operating permit, it must be renewed or updated at least every 5 years.

[NOTE: If you own or operate an area source, see the first section of this chapter labeled "Will I need a permit?".]

Where can I get help with my permit?

States are developing small business assistance programs (SBAP's) to assist small businesses with the permitting process. Contact EPA's Clean Air Technology Center (CATC) Hotline at (919) 541-0800 for information on your State SBAP contacts. Small businesses may also be eligible for reduced permitting fees. You can also contact your State or local permitting authority for more information on small business permitting assistance.

EPA's GENERAL PROVISIONS

On March 16, 1994, EPA published the General Provisions for all regulations codified in Part 63 (i.e., all NESHAP) (59 FR 12430). Numerous amendments have been made to the General Provisions that were published since the March 16th publication. The most recent amendments (as of September 2004) were published on May 30, 2003 (68 FR 32585). Refer to the Office of the Federal Register website for the latest regulatory text for the General Provisions (40 CFR Part 63, Subpart A): http://www.gpoaccess.gov/fr/index.html. When a source becomes subject to a regulation in Part 63, it automatically is subject to the General Provisions as well. However, individual regulations in Part 63 may override part or all of the General Provisions.

In the case of this regulation, EPA has overridden some of the requirements of the General Provisions. Table 1 of the chromium electroplating regulation explains in detail which sections apply and which sections are overridden.

STATE OR LOCAL CHROMIUM ELECTROPLATING REGULATIONS

State or local requirements that may have affected you prior to the new Federal regulation for chromium electroplaters and anodizers continue to apply. The Federal regulation is the minimum emission control that is required nationally. Some State and local agencies do require stricter limits. If the current State or local standard is less stringent than the Federal regulation, the Federal regulation must be met.

The format of State or local standards may be different also. For example, the California Air Resources Board Airborne Toxic Control Measure for this source category expresses emission limits in terms of process emission rates rather than emission concentrations. Through source testing, you will be measuring the concentration of emissions at the outlet in mg/dscm, which is the format needed to comply with EPA's regulation. From this, you may convert to another format, such as mg/Amp-hr required in the CARB regulation.

In addition to air pollution regulations, chromium electroplating and anodizing operations may also be subject to wastewater and solid waste disposal regulations.

CHAPTER 9

HOW MUCH WILL IT COST?

EMISSION CONTROL COSTS

The emission control costs for each of the control technologies in the regulation are summarized in Table 9-1. These costs are 1994 cost estimates and will need to be adjusted to reflect actual costs in a given year. Also, not that ranges of costs presented in the table will vary considerably depending on the size of the facility. Separate cost ranges are given for new versus existing facilities because of the added cost associated with retrofitting existing facilities. For detailed cost information, refer to the other EPA guidance materials listed in Chapter 10 of this guidebook.

What do the capital costs include?

The installed capital costs include:

- the purchased cost of the control device and cost for auxiliaries, such as inlet and outlet transition zones, exhaust fans and motors, and stack;
- direct installation costs for erection, electrical panels and wiring, instrumentation and controls, and piping; and
- startup costs.

What do the annualized costs include?

The annualized costs include:

- direct operating costs, such as utilities; labor and maintenance materials;
- replacement parts;
- disposal and transportation of the used impaction material;
- indirect operating costs, such as overhead, property taxes, insurance and administration;
- capital recovery costs; and
- chromic acid recovery credits.

SOURCE TESTING COSTS

As discussed in Chapter 5, initial performance testing is required if you are using a control device to comply with the regulation. Ongoing testing is not required by the regulation. The estimated cost to perform the initial performance test using EPA Reference Method 306 is about $4,500 per stack if you hire an outside testing firm. However, you may choose to do the testing inhouse using EPA Reference Method 306A, which is simpler and less expensive than Method 306. The costs associated with performing one test using Method 306A are shown below:

TABLE 9-1. ESTIMATED EMISSION CONTROL COSTS[a]

Control technology	Capital costs, $		Annualized costs, $	
	New	Existing	New	Existing
Fume suppressants (FS)	none	none	1,100 to 18,500	1,100 to 18,500
Packed-bed scrubber (PBS)	39,400 to 159,500	49,300 to 199,400	10,400 to 41,700	11,900 to 47,900
Composite mesh-pad (CMP) system	29,200 to 154,300	36,500 to 192,900	14,500 to 82,400	16,000 to 90,400
Combination PBS/CMP system	62,400 to 210,200	78,000 to 262,800	18,300 to 77,500	20,700 to 86,000
Fiber-bed mist eliminator (FBME)	123,200 to 540,400	135,500 to 739,700	31,100 to 160,400	33,000 to 168,000

[a] 1994 dollars.

Sampling train	$ 600
Pitot, manometer, chemicals	$ 50
Labor	$ 180
Analysis	$ 320
TOTAL COST	$1,150

If you conduct your own performance test, you save an estimated $3,350 over having an outside testing firm do the work. Besides this initial cost savings, your company would also get to keep the equipment. If any additional testing is necessary, it would cost only about $510 (for labor, analysis, and chemicals) rather than an additional $4,500 per stack.

MONITORING EQUIPMENT COSTS

Stalagmometers, which are devices used to measure the surface tension of the plating bath, cost about $128 (price quote from Lurex Scientific). Tensiometers may also be used to measure surface tension and cost about $80 (price quote from Fisher Scientific). A stainless steel S-type pitot tube, used to measure velocity pressure at the inlet of a control device, costs from about $50 to $65 depending on the length of the tube. In this application, pitot tubes may have to be replaced about every 4 months due to corrosion. A pressure gauge used to monitor pressure drop (e.g., a magnehelic gauge) costs about $120. Monitoring equipment are available from numerous vendors. You may consult your fume suppressant supplier for recommendations on how to obtain the equipment.

MONITORING, RECORDKEEPING, AND REPORTING COSTS

The average ongoing annual cost for monitoring, recordkeeping, and reporting is about $2,300 per facility. (Sources that have to perform initial testing will incur additional upfront costs associated with the testing and notification requirements.) This cost estimate is an average for all types and sizes of operations; small sources will incur lower costs due to the reduced requirements for these sources.

PERMITTING FEES

As discussed in Chapter 8, you may be required by the regulation to obtain an operating permit under title V of the CAA. If so, you will be charged a permit or emission fee by your State or local permitting authority when you apply for your title V permit. This fee will vary from State to State. For more information on title V operating permit fees, contact your State or local permitting authority or the EPA Regional Office for your State.

CHAPTER10

WHERE CAN I GO FOR MORE INFORMATION AND ASSISTANCE?

For more information on how to comply with this regulation, please call:

- your State or local air pollution control agency; your local, regional, or national metal finishers trade association;
- your State Small Business Assistance Program; or
- your State Small Business Ombudsman.

For information on your State Small Business Assistance Program contacts, call EPA's Control Technology Center Hotline at (919) 541-0800.

Also, for more information, you may call the EPA Regional Office that serves your State or territory. Table 10-1 lists the telephone numbers of the 10 EPA Regional Offices and the States and territories that they serve.

EPA's ELECTRONIC BULLETIN BOARD SYSTEM

The EPA operates an electronic bulletin board, the *Technology Transfer Network or "TTN, "* which contains copies of preambles and regulations, background information documents, policy memoranda, and other guidance materials. You may access portions of the EPA's TTN via modem by dialing (919) 541-5742. Assistance with the TTN is available by calling (919) 541-5384.

OTHER EPA GUIDANCE MATERIALS

In developing this regulation, EPA has prepared other materials that provide more information on the technical aspects of the regulation. These include:

- *Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations--Background*
- *Information for Proposed Standards (Volumes I and 11).* EPA-453/R-93-030a and 030b. July 1993.
- *Technical Assessment of New Emission Control Technologies Used in the Hard Chromium Electroplating Industry.* EPA-453/R-93-031. July 1993.
- *Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations--Background Information for Promulgated Standards.* EPA-453/R-94-082b. November 1994.

Copies of these reports are available through EPA's TTN.

Also, EPA has developed a videotape to assist sources in using EPA Reference Method 306A entitled Construction and

TABLE 10-1. EPA REGIONAL OFFICE CONTACTS

Region	Telephone #	States covered	Address
1	(617) 918-1650	CT, ME, MA, NH, RI & VT	Director, Air, Pesticides and Toxics Division J.F.K. Federal Building One Congress Street Boston, MA 02203-2211
2	(212) 637-4080	NJ, NY, Puerto Rico & Virgin Islands	Director, Air and Waste Management Division 26 Federal Plaza New York, NY 10278
3	(215) 814-3483	DE, MD, PA, VA, WV & District of Columbia	Director, Air, Radiation and Toxics Division 1650 Arch Street Philadelphia, PA 19103
4	(404) 562-9105	AL, FL, GA, KY, MS, NC, SC & TN	Director, Air, Pesticides and Toxics Atlanta Federal Center 61 Forsyth Street SW Atlanta, GA 30303-3104
5	(312) 353-2211	IL, IN, MI, WI, MN & OH	Director, Air and Radiation Division 77 West Jackson Blvd. Chicago, IL 60604-3507
6	(214) 665-7224	AR, LA, NM, OK & TX	Director, Air, Pesticides and Toxics 1445 Ross Avenue 12th Floor, Suite 1200 Dallas, TX 75202-2733
7	(913) 551-7020	IA, KS, MO & NE	Director, Air and Toxics Division 901 N. 5th Street Kansas City, KS 66101
8	(303) 312-6007	CO, MT, ND, SD, UT & WY	Director, Air and Toxics Division 999 18th Street Suite 500 Denver, CO 80202-2405
9	(415) 744-1219	AZ, CA, HI, NV, American Samoa & Guam	Director, Air and Toxics Division 75 Hawthorne Street San Francisco, CA 94105
10	(206) 553-4273	AK, ID, WA & OR	Director, Air and Toxics Division 1200 Sixth Avenue (OAQ-107) Seattle, WA 98101

Operation of the EPA Method 306A Sampling Train and Practical Suggestions for Monitoring of Electroplating and Anodizing Facilities. This videotape is available for a nominal fee through North Carolina State University, Registrar, Environmental Programs, Box 7513, Raleigh, North Carolina 27695-7513. The telephone number is (919) 515-5875.

APPENDIX A

GLOSSARY OF TERMS

Add-on air pollution control device (APCD) 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).

Administrator means the Administrator of the United States Environmental Protection Agency or his or her authorized representative (e.g., a State that has been delegated the authority to implement the provisions of 40 CFR part 63).

Air pollution control technique means any method, such as an add-on air pollution control device or a chemical fume suppressant, that is used to reduce chromium emissions from chromium electroplating and chromium anodizing tanks.

Area source means any stationary source of hazardous air pollutants that is not a major source as defined below in this appendix. Another term for area source is "nonmajor source."

Base metal means the metal or metal alloy that comprises the workpiece.

Bath component means the trade or brand name of each component(s) in trivalent chromium plating baths. For trivalent chromium baths, the bath composition is proprietary in most cases. Therefore, the trade or brand name for each component(s) can be used; however, the chemical name of the wetting agent contained in that component must be identified.

Chromic acid means the common name for chromium anhydride (CrO_3).

Chromium anodizing or chromic acid anodizing means the electrolytic process by which an oxide layer is produced on the surface of a base metal for functional purposes (e.g., corrosion resistance or electrical insulation) using a chromic acid solution. In chromium 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.

Chromium anodizing tank means the receptacle or container along with the following accompanying internal and external components needed for chromium anodizing: rectifiers fitted with controls to allow for voltage adjustments, heat exchanger equipment, circulation pumps and air agitation systems.

Chromium electroplating tank means the receptacle or container along with the following internal and external components needed for chromium electroplating: rectifiers, anodes, heat exchanger equipment, circulation pumps and air agitation systems.

Composite mesh-pad (CMP) system means an add-on air pollution control device 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.

Decorative chromium electroplating means the process by which a thin layer of chromium (typically 0.003 to 2.5 microns) is electro-deposited 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 50 to 220 Amperes per square feet (A/ft^2) for total plating times ranging between 0.5 to 5 minutes.

Electroplating hard chromium electroplating tank means a chromium electroplating tank that is equipped with an enclosing hood and ventilated at half the rate or less than that of an open surface tank of the same surface area.

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 purposes of electroplating metal out of the solution onto a workpiece or for oxidizing the base material.

Emission limitation means, for the purposes of this regulation, 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).

Enclosed hard chromium electroplating tank means a chromium electroplating tank that is equipped with an enclosing hood and ventilated at half the rate or less that of an open surface tank of the same surface area.

Facility means the major or area source at which chromium electroplating or chromium anodizing is performed.

Fiber-bed mist eliminator (FBME) means an add-on air pollution control device that removes contaminants from a gas stream through the mechanisms of inertial impaction and Brownian diffusion. These devices are typically installed downstream of another control device, which serves to prevent plugging, and consist 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.

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.

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.

Fume suppressant (FS) means any chemical agent that reduces or suppresses fumes or

mists at the surface of an electroplating or anodizing bath; other terms for fume suppressant are chemical fume suppressant and mist suppressant.

Hard chromium electroplating or industrial chromium electroplating means a process by which a thick layer of chromium (typically 1.3 to 760 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 150 to 600 A/ft^2 for total plating times ranging from 20 minutes to 36 hours depending upon the desired plate thickness.

Hexavalent chromium means the form of chromium in a valence state of +6.

Large, hard chromium electroplating facility means a facility that performs hard chromium electroplating and has a maximum cumulative potential rectifier capacity greater than or equal to 60 million ampere-hours per year (amp-hr/yr).

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.

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.

Open surface hard chromium electroplating tank means a chromium electroplating tank that is ventilated at a rate consistent with good ventilation practices for open tanks.

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.

Packed-bed scrubber (PBS) means an add-on air pollution control device 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.

Research or laboratory operation means an operation whose primary purpose is for research and development of new processes and products, that is conducted under the close

supervision of technically trained personnel, and that is not involved in the manufacture of products for commercial sale in commerce, except in a de minimis manner.

Small, hard chromium electroplating facility means a facility that performs hard chromium electroplating and has a maximum cumulative potential rectifier capacity less than 60 million amp-hr/yr.

Stalagmometer means an instrument used to measure the surface tension of a solution by determining the mass of a drop of liquid by weighing a known number of drops or by counting the number of drops obtained from a given volume of liquid.

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 (expressed in dynes/cm).

Tank operation means the time in which current and/or voltage is being applied to a chromium electroplating tank or a chromium anodizing tank.

Technology Transfer Network (TTN) means a network of electronic bulletin boards developed and operated by EPA's Office of Air Quality Planning and Standards. The network provides information and technology exchange in different areas of air pollution control, ranging from emission test methods to regulatory air pollution models. The service is free, except for the cost of the phone call. The TTN may be accessed from a computer through the use of a modem and communications software.

Tensiometer means an instrument used to measure the surface tension of a solution by determining the amount of force needed to pull a ring from the liquid surface. The amount of force is proportional to the surface tension.

Trivalent chromium means the form of chromium in a valence state of +3.

Trivalent chromium process means the process used for electro-deposition of a thin layer of chromium onto a base material using a trivalent chromium solution instead of a chromic acid solution.

Wetting agent means the type of chemical fume suppressant that reduces the surface tension of a liquid.

APPENDIX B

LIST OF KNOWN FACILITIES IN 1995

FACILITY NAME, LOCATION[a]
CHROME DEPOSIT, AL
UNITED CHAIR CO, IRONDALE, AL
HAGER HINGE COMPANY, MONTGOMERY, AL
JR SMITH MFG, MONTGOMERY, AL
MONROE AUTO EQUIPMENT, PARAGOULD, AR
OSBORN PRODUCTS, INC, PHOENIX, AZ
TREFFERS PRECISION, INC, PHOENIX, AZ
MCCLELLAN AFB, CA
ROLL TECH WEST, CA
NAVAL AVIATION DEPOT, ALAMEDA, CA
PEMACO METAL PROCESSING, ALHAMBRA, CA
SCIENTIFIC HARD CHROME PLATING, ALHAMBRA, CA
AMERICAN PRECISION METAL WORKS, ANAHEIM, CA
CANYON PRECISION PLATING, ANAHEIM, CA
PORTER PLATING CO, INC, ANAHEIM, CA
PRECISION ANODIZING & PLATING, ANAHEIM, CA
ROCKWELL INTERNATIONAL, ANAHEIM, CA
TECHPLATE ENGINEERING, ANAHEIM, CA
BROTHERS PLATING, AZUSA, CA
OPTICAL RADIATION CORPORATION, AZUSA, CA
A & A PLATING, BAKERSFIELD, CA
AC PLATING, BAKERSFIELD, CA
BAKERSFIELD CHROME & BUMPER, BAKERSFIELD, CA
BROOKSHIRES PLATING, BAKERSFIELD, CA
STANDAFER ENTERPRISES, BALDWIN PARK, CA
CHROME CRANKSHAFT CO, BELL GARDENS, CA
DYNA-CHROME ENGINEERING, BELL GARDENS, CA
J & S CHROME PLATING CO, INC, BELL GARDENS, CA
MODEL PLATING CO, INC, BELL GARDENS, CA
ELECTRO-COATINGS INC, BERKELEY, CA
LAWRENCE BERKELEY LABORATORY, BERKELEY, CA
BEVERLY HILLS PLATING WORKS, BEVERLEY HILLS, CA
WEST COAST PLATING, BUELLTON, CA

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[a]NOTE: THIS LIST IS INCOMPLETE AND DOES NOT INCLUDE ALL SOURCES AFFECTED BY THE REGULATION. ALSO, SOME COMPANIES ON THIS LIST MAY NO LONGER BE IN OPERATION.

FACILITY NAME, LOCATION[a]
A-H PLATING, BURBANK, CA
ACCESSORY PLATING, BURBANK, CA
AVIALL, INC, BURBANK, CA
CARTER PLATING, BURBANK, CA
CRANE CO, HYDRO-AIRE DIVISION, BURBANK, CA
KAHR BEARING, BURBANK, CA
LOCKHEED CALIFORNIA CO, BURBANK, CA
MAGNA PLATING CO, INC, BURBANK, CA
MENASCO OVERHAUL DIVISION, BURBANK, CA
MESTAS PLATING, BURBANK, CA
SPENCE ELECTRO PLATING CO, BURBANK, CA SUN
ART PLATING CO, BURBANK, CA CHATSWORTH
PLATING CORP, CANOGA PARK, CA
ROCKWELL INTERNATIONAL CORP, CANOGA PARK, CA
ROHR INDUSTRIES INC, CHULA VISTA, CA
CONSOLIDATED DEVICES, INC, CITY OF INDUSTRY, CA
PLATO PRODUCTS INC, CITY OF INDUSTRY, CA
SPECIALIZED HARD CHROME, CLOVIS, CA
EMPIRE PLATING INC, COLTON, CA
ALLIED PLATING WORKS, COMPTON, CA
BOWMAN PLATING CO, COMPTON, CA
CAL-STYLE FURNITURE MFG CO, COMPTON, CA
S & K PLATING, INC, COMPTON, CA
LE MANS PLATING INC, CORONA, CA
BROWN INTERNATIONAL CORP, COVINA, CA
CACO PACIFIC CORP, COVINA, CA
INTERMETRO INDUSTRIES, CUCAMONGA, CA
ROBERT MFG CO, CUCAMONGA, CA
MCDONNELL DOUGLAS HELICOPTERS, CULVER CITY, CA
PACIFIC PISTON RING CO, INC, CULVER CITY, CA
BRICO METAL FINISHING, DOWNEY, CA
FEDERAL-MOGUL CORP, DOWNEY, CA
JAYDIE, DOWNEY, CA

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FACILITY NAME, LOCATION[a]
SPECIALIZED PROCESSING CO, INC, EL CAJON, CA
CENTRAL PLATING SERVICE, EL MONTE, CA
CROWN CITY PLATING CO, EL MONTE, CA
EL MONTE PLATING CO, EL MONTE, CA
FIELD MANUFACTURE CORP, EL SEGUNDO, CA
GAR HONING SERVICE, INC, EL SEGUNDO, CA
SUPERIOR QUALITY PLATING INC, EL SEGUNDO, CA
WYREFAB INC, EL SEGUNDO, CA
CHROMEX, EMERYVILLE, CA
ANODIZING SPECIALIST, ESCONDIDO, CA
ROBBINS & MYERS, FAIRFIELD, CA
RUTTER ARMEY, FRESNO, CA
KRYLER CORP, FULLERTON, CA
PCA METAL FINISHING INC, FULLERTON, CA
WESTERN ROTO ENGRAVERS INC, FULLERTON, CA
ANGELUS PLATING WORKS, GARDENA, CA
JAMES G. LEE RECORD PROCESSING, GARDENA, CA
LOS ANGELES PLATING, GARDENA, CA
DRILUBE COMPANY, GLENDALE, CA
ITT GENERAL CONTROLS, GLENDALE, CA
PENNOYER-DODGE CO, GLENDALE, CA
PLATO PRODUCTS, GLENDORA, CA
BUMPERLINE INC, HARBOR CITY, CA
DYNAMARK, LTD, HARBOR CITY, CA
QUALITY HARDWARE MFG CO, HAWTHORNE, CA
VEILING PLATING CO, INC, HOLLYWOOD, CA ANO
D' ART INC, HUNTINGTON BEACH, CA
PRODUCTION PLATING, HUNTINGTON BEACH, CA
TARBY INC, HUNTINGTON BEACH, CA
WEISER LOCK CO, HUNTINGTON BEACH, CA
CHROMPLATE CO, INGLEWOOD, CA
MICROPLATE CO INC, INGLEWOOD, CA
PRINTRONIX, IRVINE, CA

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FACILITY NAME, LOCATION[a]
STERLING ELECTRIC, INC, IRVINE, CA
LA HABRA PLATING CO, LA HABRA, CA
EQUALITY PLATING CO, LA MESA, CA
SIGMA PLATING CO, LA PUENTE, CA
SIZE CONTROL PLATING CO, LA PUENTE, CA
LAWRENCE LIVERMORE NATL LAB, LIVERMORE, CA
VALLEY IND INC, LODI, CA
CAL BUMPER CO, INC, LONG BEACH, CA
DOUGLAS AIRCRAFT, LONG BEACH, CA
LONG BEACH PLATING, LONG BEACH, CA
NAVAL SHIPYARD/P.W./ENGR, LONG BEACH, CA
NOVA TECHNO CORP, LONG BEACH, CA
U.S. CHROME CORP OF CALIF, LONG BEACH, CA
ACE PLATING COMPANY INC, LOS ANGELES, CA
ACME METAL FINISHING, LOS ANGELES, CA
ALL AMERICAN MANUFACTURING, LOS ANGELES, CA
AMERICAN ELECTROPLATING, LOS ANGELES, CA ANGELUS
SANITARY CAN MACHINE, LOS ANGELES, CA ARROWHEAD
BRASS PRODUCTS, LOS ANGELES, CA AUTOMOTIVE
BATTERY PRODUCTS CO, LOS ANGELES, CA BARRY
AVENUE PLATING CO, INC, LOS ANGELES, CA BATHROOM
JEWELERY INC, LOS ANGELES, CA
BRITE PLATING CO INC, LOS ANGELES, CA
BRONZE WAY PLATING CORP, LOS ANGELES, CA
BUMPER SHOP, LOS ANGELES, CA
CALIFORNIA ELECTRO PLATING, LOS ANGELES, CA
CALIFORNIA METAL PROCESSING CO, LOS ANGELES, CA
CERTIFIED CADMIUM PLATING WORK, LOS ANGELES, CA
CHAS P. YOUNG, LOS ANGELES, LOS ANGELES, CA
CHEMPLATE CORPORATION, LOS ANGELES, CA CHROMAL
PLATING CO, LOS ANGELES, CA CONTINENTAL AIRLINES,
LOS ANGELES, CA
CUSTOM PLATING CORP, LOS ANGELES, CA

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FACILITY NAME, LOCATION[a]
ELECTROLIZING, INC, LOS ANGELES, CA
EXCELLO PLATING CO, INC, LOS ANGELES, CA
FAITH PLATING CO, LOS ANGELES, CA
GENE'S PLATING WORKS, LOS ANGELES, CA
HARDEN INDUSTRIES, LOS ANGELES, CA
HENRY SOSS & CO INC, LOS ANGELES, CA
IDEAL PLATING, LOS ANGELES, CA
METCOR MFG, LOS ANGELES, CA
MODERN PLATING CO, LOS ANGELES, CA
MULTICHROME CO INC, LOS ANGELES, CA
NU-WAY PLATING CO, LOS ANGELES, CA
PHYLRICH INTERNATIONAL, LOS ANGELES, CA
ROYAL PLATING WORKS CO, LOS ANGELES, CA
SERVICE PLATING CO, INC, LOS ANGELES, CA
STANDARD NICKEL CHROMIUM PLATING, LOS ANGELES, CA
STANDARD PLATING, LOS ANGELES, CA
SUPERCHROME PLATING & ENGR CO, LOS ANGELES, CA
V&M PLATING, LOS ANGELES, CA
VALLEY PLATING WORKS INC, LOS ANGELES, CA
VIRCO MFG CORP, LOS ANGELES, CA
ALAMEDA PLATING & POLISHING, LYNWOOD, CA
CHROME NICKEL PLATING, LYNWOOD, CA
L.G. TURNER HARD CHROME PLATING, LYNWOOD, CA
MCDONNELL DOUGLAS ELECTRONIC SYSTEMS CO, MONROVIA, CA
THE CHROME SHOP, NAPA, CA
LEMON GROVE PLATING INC, NATIONAL CITY, CA
WESTERN INDUSTRIAL & MARINE, NATIONAL CITY, CA
NEWPORT PLATING, NEWPORT BEACH, CA
ALLIED/BENDIX ELECTRODYNAMICS, NORTH HOLLYWOOD, CA
CASA DE CHROME, NORTH HOLLYWOOD, CA
WESTERN PLATING, NORTH HOLLYWOOD, CA
J&K AEROCHROME, NORWALK, CA
LOGO PARIS, NOVATO, CA

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FACILITY NAME, LOCATION[a]
BARRETT METAL FINISHING INC, OAKLAND, CA
CAL TECH METAL FINISHERS, OAKLAND, CA
DOLSBY INC, OAKLAND, CA
ESPOSITO PLATING CORP, OAKLAND, CA
JOHNSON PLATING WORKS INC, OAKLAND, CA
K L PLATING CO, OAKLAND, CA
ALUMIN-ART PLATING CO, ONTARIO, CA
DYNAMARK, ONTARIO, CA
GARY'S GRINDING & HARD CHROME, ONTARIO, CA
KEYSTONE PLATING, ONTARIO, CA
TMC PLATING, ONTARIO, CA
ORANGE COUNTY PLATING CO INC, ORANGE, CA
PAMARCO PACIFIC INC, ORANGE, CA
LIMON METAL FINISHING, OXNARD, CA
MULITCHROME-OXNARD PLATING DIV, OXNARD, CA
PRICE PFISTER, INC, PACOIMA, CA
G.Q.I. CLASSIC, PALM SPRINGS, CA
CALIFORNIA POLISHING & PLATING, PARAMOUNT, CA
LEAVITT'S METAL FINISHING, PARAMOUNT, CA
WALLY'S METAL POLISH & PLATE, PARAMOUNT, CA
MONITOR POLISHING & PLATING, PASADENA, CA
USS-POSCO INDUSTRIES, PITTSBURG, CA
CHROME MASTERS PLATING CO, POMONA, CA
HOOKER INDUSTRIES, POMONA, CA
PACIFIC POLISHING AND PLATING, POMONA, CA
POLYCHROME-METALLURGISTS, REDWOOD CITY, CA
ELECTRO FORMING CO, RICHMOND, CA
BIGGERS INDUSTRIAL GERLINGER, SACRAMENTO, CA
CHROME-CRAFT, SACRAMENTO, CA
PRECISION PLATING & GRINDING, SACRAMENTO, CA
HOAK BROS PLATING, SAN BERNADINO, CA
CALIFORNIA PLATING, SAN CARLOS, CA
INDUSTRIAL PLATING CO, INC, SAN CARLOS, CA

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FACILITY NAME, LOCATION[a]
AEROSPACE COATINGS & TECHNOLOGY, SAN DIEGO, CA
CALIFORNIA PLATING, SAN DIEGO, CA
GENERAL DYNAMICS, CONVAIR DIV, SAN DIEGO, CA
KEYSTONE AUTOMOTIVE IND INC, SAN DIEGO, CA
MASTER PLATING, SAN DIEGO, CA
PACIFIC PLATING, SAN DIEGO, CA
WEST COAST PLATING (S.D.), SAN DIEGO, CA
CROPPER'S PLATING CO, SAN DIMAS, CA
CALIFORNIA TECHNICAL PLATING, SAN FERNANDO, CA
SANTEE IND, SAN FERNANDO, CA
C & M PLATING WORKS, SAN FRANCISCO, CA
J & J PLATING WORKS, SAN FRANCISCO, CA
UNITED AIRLINES MAINTENANCE, SAN FRANCISCO, CA
WESTERN ROTO, SAN FRANSICO, CA
ARCATA GRAPHICS/SAN JOSE, SAN JOSE, CA
FAITH T&R PLATING, SAN JOSE, CA
T & B AUTO BUMPER SERVICE, SAN JOSE, CA
DEL RAY CHROME, SANTA ANA, CA
EMBEE PLATING, SANTA ANA, CA
LEAR SEIGLER, INC, SANTA ANA, CA
REID METAL FINISHING, SANTA ANA, CA
S&G TUBE CO INC, SANTA ANA, CA
SANTA ANA PLATING, SANTA ANA, CA
A-1 CHEMNETICS, SANTA CLARA, CA
A-1 METAL FINISHING, INC, SANTA FE SPRINGS, CA
CAL-TRON PLATING, SANTA FE SPRINGS, CA
ELECTRONIC CHROME AND GRINDING CO, SANTA FE SPRINGS, CA
FOSS PLATING CO, INC, SANTA FE SPRINGS, CA
GELARDI'S PLATING INC, SANTA ROSA, CA
SANTA ROSA PLATING WORKS, SANTA ROSA, CA
ARTISTIC POLISHING & PLATING, SOUTH EL MONTE, CA
MIL-SPEC PLATING CORP, SOUTH EL MONTE, CA
ANADITE, INC, SOUTH GATE, CA

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FACILITY NAME, LOCATION[a]
DOMAR PRECISION, SOUTH GATE, CA
UNITED PLATING INC, SOUTH SAN FRANCISCO, CA
STANFORD LINEAR ACCELERATOR, STANFORD, CA
STOCKTON PLATING INC, STOCKTON, CA
DIXON HARD CHROME, INC, SUN VALLEY, CA
FLIGHT ACCESSORY SERVICES, SUN VALLEY, CA
VALLEY TODECO CO, SYLMAR, CA
BORG WARNER, TEMECULA, CA
PICHEL INDUSTRIES INC, TEMECULA, CA
DOUGLAS AIRCRAFT CO, TORRANCE, CA
MCDONNELL DOUGLAS, TORRANCE, CA
THE TORRINGTON CO, TORRINGTON, CA
BUCK'S OF UPLAND, UPLAND, CA
MARE ISLAND NAVAL SHIPYARD, VALLEJO, CA
THE MARQUARDT CO, VAN NUYS, CA
THE MASTER PLATING, INC, VENTURA, CA
CHRISTENSEN PLATING INC, VERNON, CA
FRANCIS PLATING, VERNON, CA
ELECTRO-COATINGS, INC, WEST SACRAMENTO, CA
WASHINGTON PLATING, WHITTIER, CA
REMCO HYDRAULICS, INC, WILLITS, CA
C&R RECONDITIONING CO, INC, WILMINGTON, CA
AXELSON, INC, COLORADO SPRINGS, CO
SUNDSTRAND AVIATION OPERATIONS, DENVER, CO
TOOLS FOR BENDING, INC, DENVER, CO
KAMAN, BLOOMFIELD, CT
RELIABLE PLATING AND POLISHING CO, BRIDGEPORT, CT
PRATT AND WHITNEY, EAST HARTFORD, CT
HAMILTON STANDARD SERVICES, EAST WINDSOR, CT
AEROTECH, HARTFORD, CT
KAMAN, MOOSHAP, CT
WARING PRODUCTS DIVISION D.C.A., NEW HARTFORD, CT
A-1 CHROME, NEWINGTON, CT

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FACILITY NAME, LOCATION[a]
SANITARY-DASH MFG CO INC, NO. GROSVENORDALE, CT
PRATT-WHITNEY, NORTH HAVEN, CT
THE PERKIN-ELMER CO, NORWALK, CT
LIGHTOLIER, INC, NORWICH, CT
PITNEY BOWES, INC, STAMFORD, CT
SIKORSKY AIRCRAFT DIVISION, STRATFORD, CT
WHYCO CHROMIUM COMPANY, INC, THOMASTON, CT
NUTMEG CHROME CORP, WEST HARTFORD, CT
HAMILTON STANDARD, WINDSOR LOCKS, CT
HOLLY CHEMICAL CO, WOODBURY, CT
GULF PLATING, FT. CAUDI, FL
NAVAL AVIATION DEPOT, JACKSONVILLE, FL
AEROTHRUST, MIAMI, FL
PERKO, INC, MIAMI, FL
MARTIN MARIETTA AEROSPACE, ORLANDO, FL
PENSACOLA NAVAL AIR REWORK FACILITY, PENSACOLA, FL
GULF COAST PLATING, INC, PENSACOLA, FL
FLORIDA PLATING, INC, PINELLAS PARK, FL
HUGHES HARD CHROME CO, TAMPA, FL
PRECISION INDUSTRIES, GA
MACGREGOR GOLF COMPANY, ALBANY, GA
UNITED STATES PLATING & BUMPER SERVICE, ALTANTA, GA
WESTERN ROTO, ALTANTA, GA
U.S. PLATING, ATLANTA, GA
CUMMINS ENGINE COMPANY, INC, FLOWERY BRANCH, GA
VERMONT AMERICAN CORP, TOCCOA GA
UNIVERSAL GYM AND NISSEN CO, CEDAR RAPIDS, IA
DU PAGE PLATING CO, ADDISON, IL
QUALITY METAL FINISHING CO, BYRON, IL
ACME SCIENTIFIC, INC, CHICAGO, IL
BILBO PLATING CO, CHICAGO, IL
BROOKLINE INDUSTRIES, INC, CHICAGO, IL
CHICAGO MODERN PLATING CO, CHICAGO, IL

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FACILITY NAME, LOCATION[a]
CHROMIUM INDUSTRIES, INC, CHICAGO, IL
DRISCOLL, CHICAGO, IL
DURO-CHROME CORP, CHICAGO, IL
ECONOMY PLATING, INC, CHICAGO, IL
EMPIRE HARD CHROME, INC, CHICAGO, IL
JENSEN PLATING WORKS, INC, CHICAGO, IL
MOSCHIANO PLATING, INC, CHICAGO, IL
NOBERT PLATING COMPANY PLANT NO. 2, CHICAGO, IL
YALE POLISHERS AND PLATERS, INC, CHICAGO, IL
CJ SAPORITO PLATING (ACCURATE ANODIZING), CICERO, IL
WEST TOWN PLATING, INC, CICERO, IL
INDUSTRIAL HARD CHROME, INC, ELK GROVE VILLAGE, IL
PRECISION CHROME INC, FOX LAKE, IL
BELMONT PLATING WORKS, FRANKLIN PARK, IL
NOVA-CHROME, INC, FRANKLIN PARK, IL
SLOAN VALVE CO, FRANKLIN PARK, IL
MODERN PLATING CORP, FREEPORT, IL
DEEVE AND CO, MOLINE, IL
ARLINGTON PLATING CO, PALATINE, IL
ROCKFORD PRODUCTS CORP, ROCKFORD, IL
CASTLE METAL FINISHING CORP, SHILLER PARK, IL
PRECISION PLATING DIVISION, R&R SALES, SOUTH CHICAGO HEIGHTS, IL
AL-BAR LABS WILMETTE PLATERS, WILMETTE, IL
WOODSTOCK DIE CAST, INC, WOODSTOCK, IL
BASTIAN PLATING CO INC, AUBURN, IN
PALMER INDUSTRIES, AURORA, IN
COSCO, INC, COLUMBUS, IN
MCDOWELL ENTERPRISE, INC, ELKHART, IN
WAYNE BLACK OXIDE, INC, FORT WAYNE, IN
NEO INDUSTRIES, GARY, IN
DELTA FAUCET CO, GREENSBURG, IN
B&B CUSTOM PLATING, HOAGLAND, IN
CITY PLATING COMPANY, INC, INDIANAPOLIS, IN

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FACILITY NAME, LOCATION[a]
WILLIAMSON POLISHING & PLATING, INDIANAPOLIS, IN
BAYCOTE METAL FINISHING, MISHAWAKA, IN
SHERRY LABORATORIES, MUNCI, IN
C&M PLATING CO, INC, ROANOKE, IN
SHELBYVILLE PLATING-POLISHING CO, SHELBYVILLE, IN
PRECISION INDUSTRIES, MCPHERSON, KS
KANSAS PLATING, INC, WICHITA, KS
UNIVERSAL FASTNERS, INC, LAWRENCEBURG, KY
CUSTOM PLATING OF LOUISVILLE, LOUISVILLE, KY
KENTUCKY PLATING COMPANY, INC, LOUISVILLE, KY
N.I. INDUSTRIES, NICHOLASVILLE, KY
FENWAL INC, ASHLAND, MA
WALTON AND ONSBURY, INC, ATTLEBORO, MA
FOXBORO CO, FOXBORO, MA
NEPONSET, FOXBORO, MA
ADTEC INDUSTRIES, INC, LAWRENCE, MA
CIRCLE FINISHING, INC, NEWBURY, MA
FREDERICK R. GROVER COMPANY, INC, ROCKPORT, MA
NOMETCO, INC, WARE, MA
FOUNTAIN PLATING CO, WEST SPRINGFIELD, MA
WESTFIELD ELECTROPLATING CO, WESTFIELD, MA
ACME PLATING CO., INC, BALTIMORE, MD
ALLIED METAL FINISHING CORP, BALTIMORE, MD
ALMAG PLATING CORP, BALTIMORE, MD
MUFFOLETTO OPTICAL COMPANY, INC, BALTIMORE, MD
METAL FINISHING, INC, HAGERSTOWN, MD
SACO DEFENSE, INC, SACO, ME
SILVEX, INC, WESTBROOK IND. PARK, ME
BELLEVILLE PLATING, BELLEVILLE, MI
BRONSON PLATING CO, BRONSON, MI
BUICK-OLDSMOBILE-CADILLAC GROUP, DETROIT, MI
CHRYSLER CORP, DETROIT, MI
GENERAL PLATING, INC, DETROIT, MI

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FACILITY NAME, LOCATION[a]
STANLEY TOOLS DIVISION, FOWLERVILLE, MI
BISSELL INC, GRAND RAPIDS, MI
FCM PLASTICS DIVISION OF PLASTICS TECHNOLOGY, GRAND RAPIDS, MI
KEELER AUTOMOTIVE HARDWARE, GRAND RAPIDS, MI
CHROME CRAFT CORP, HIGHLAND PARK, MI
OTTAWA GAGE, INC, HOLLAND, MI
DIAMOND CHROME PLATING, INC, HOWELL, MI
KEELER BRASS AUTOMOTIVE - KENTWOOD PLANT, KENTWOOD, MI
CHEVROLET-PONTIAC-CANADA GROUP, LIVONIA, MI
ATTWOOD CORP, LOWELL, MI
LEAR SIEGLER PLASTICS CORP, MENDON, MI
CRECO, INC, OWOSSO, MI
AUTOMATIC DIE CASTING SPECIALTIES, ST CLAIR SHORES, MI
LECO PLATING DIVISION, LECO CORP, ST JOSEPH, MI
C.S. OHM MANUFACTURING CO, STERLING HEIGHTS, MI
CHRYSLER CORP, STERLING HEIGHTS, MI
CHRYSLER CORP, WARREN, MI
MODERN HARD CHROME SERVICE CO, WARREN, MI
UNISYS PARK, EAGAN, MN
NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT, FRIDLEY, MN
DOUGLAS CORP, MINNEAPOLIS, MN
CHROMOCRAFT FURNITURE, SENATOBIA, MS
LUFKIN RULE, APEX, NC
CONSOLIDATED ENGRAVERS CORP, CHARLOTTE, NC
GIBBS PLATING CO, CHARLOTTE, NC
STORK SCREEN, CHARLOTTE, NC
C&R CHROME SERVICES, INC, GASTONIA, NC
GREENSBORO INDUSTRIAL PLATERS, GREENSBORO, NC
UNITED METAL FINISHING, INC, GREENSBORO, NC
CUSTOM PROCESSING CO, HIGH POINT, NC
SWAIM METALS, INC, HIGH POINT, NC
PIEDMONT INDUSTRIAL PLATING, STATESVILLE, NC
NORTH AMERICAN ROTO, WINSTON SALEM, NC

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FACILITY NAME, LOCATION[a]
MONROE AUTO EQUIPMENT, COZAD, NE
PLATING PRODUCTS, NJ
MILLER AND SON, INC, BELLEVILLE, NJ
KAEHR CORP.(KAEHR PLATING AND METAL FIN), ALBUQUERQUE, NM
LEVCO METAL FINISHERS, NY
HUDSON CHROMIUM COMPANY, INC, ASTORIA, NY
CHROMIUM PLATING & POLISHING CORP, BROOKLYN, NY
JAYAR METAL FINISHING CORP, BROOKLYN, NY
NORWOOD ELECTROPLATING, INC, BROOKLYN, NY
GENERAL SUPERPLATING CO, EAST SYRACUSE, NY
HYGRADE POLISHING AND PLATING, LONG ISLAND CITY, NY
KINGS/KINGSLEY CORP, MASPETH, NY
P.J. VERNEUIL ELECTROPLATING, MT. VERNON, NY
ERIC S. TURNER & CO, INC, NEW ROCHELLE, NY
CHROMIUM PLATING POLISHING, NEW YORK, NY
CATARACT METAL FINISHING, INC, NIAGARA FALLS, NY
MCGRAW-EDISON POWER SYSTEMS, OLEAN, NY
RAYCO OF SCHENECTADY, SCHENECTODY, NY
ANOPLATE CORP, SYRACUSE, NY
NATIONAL PLATING CO, INC, SYRACUSE, NY
BENET LABORATORIES, WATERULIET, NY
VERNON PLATING WORKS, INC, WOODSIDE, NY
PRECISION PLATING CO, AKRON, OH
ACME HARD CHROME, ALLIANCE, OH
BELLAFONTAINE PLATING MANUFACTURING CO, BELLEFONTAINE, OH
OLYMCO, INC, CANTON, OH
UNITED HARD CHROME CORP, CANTON, OH
CINCINNATI MILACRON, OAKLEY, CINCINNATI, OH
SMITH ELECTROCHEMICAL CO, CINCINNATI, OH
THOMPSON CONSUMER ELECTRONICS, CIRCLEVILLE, OH
C. T. INDUSTRIES, INC, CLEVELAND, OH
CHROME INDUSTRIES, INC, CLEVELAND, OH
CRAFT MASTERS, CLEVELAND, OH

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FACILITY NAME, LOCATION[a]
METALS APPLIED, INC, CLEVELAND, OH
MR. GASKET COMPANY, CLEVELAND, OH
FRANKLIN PLATING, COLUMBUS, OH
OI-NEG, COLUMBUS, OH
HOHMAN PLATING & MANUFACTURING, INC, DAYTON, OH
K&F METAL FINISHERS, INC, DAYTON, OH
MIAMI PRECISION CHROME, DAYTON, OH
STANDARD REGISTER, DAYTON, OH
U.S. CHROME CORP OF OHIO, DAYTON, OH
PLATERS SERVICE, INC, ENGLEWOOD, OH
CASE PLATING, LORAIN, OH
DELCO-MORAINE, MORAINE, OH
NORTH CANTON PLATING CO, NORTH CANTON, OH
WHITAKER PLATING, NORTHWOOD, OH
CHAMPION SPARK PLUG COMPANY, TOLEDO, OH
PLATING PERCEPTIONS INC, TWINSBURG, OH
FULTON INDUSTRIES, INC, WAUSEON, OH
YOUNGSTOWN HARD CHROME, YOUNGSTOWN, OH
COOPER TOOLS, PA
AMERICAN BANKNOTE, HORSHAM, PA
PAUL'S CHROME PLATING, INC, MARS, PA
FRANKLIN MINT HARING PL, PHILADELPHIA, PA
OI-NEG, PITTSTON, PA
METALIFE INDUSTRIES INC, RENO, PA
ARMOLOY OF WESTERN PA, INC, TURTLE CREEK, PA
CATEPILLAR, INC, YORK, PA
GARROD HYDRAULICS, INC, YORK, PA
HARD CHROMIUM SPECIALISTS, YORK, PA
MICROFIN CORP, PROVIDENCE, RI
SURFACE COATING DIV WESTNELL IND, PROVIDENCE, RI
B&E, SC
CONSOLIDATED ENGRAVERS CORP, CHESTER, SC
PROGRESS LIGHTING, COWPINS, SC

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FACILITY NAME, LOCATION[a]
GENERAL ELECTRIC CO, FLORENCE, SC
CAROLINA PLATING CO, GREENVILLE, SC
ROLL TECHNOLOGY, INC, GREENVILLE, SC
STEEL HEDDLE CO, GREENVILLE, SC
TRUE TEMPER SPORTS, SENECA, SC
SAXONIA FRANKE OF AMERICA, SPARTANBURG, SC
ABLE MACHINE CO, TAYLORS, SC
T&S BRASS AND BRONZE WORKS, TRAVELERS REST, SC
HARMAN AUTOMOTIVE, INC, BOLIVAR, TN
MURRAY OHIO MANUFACTURING CO, LAWRENCEBURG, TN
MAREMONT CORP, PULASKI, TN
COASTAL PLATING, CORPUS CHRISTI, TX
MENASCO, EULESS, TX
TEXAS PRECISION PLATING, INC, GARLAND, TX
FUSION, INC, HOUSTON, TX
PRECISE PRODUCTS, WACO, TX
PRECISION INTERNATIONAL CO, WACO, TX
HILL AFB, OGDEN, UT
QUALITY PLATING CO, SALT LAKE CITY, UT
ALEXANDRIA METAL FINISHERS, LORTON, VA
NEWPORT NEWS SHIPBUILDING/DRY DOCK CO, NEWPORT NEWS, VA
NORFOLK NAVAL AIR REWORK FACILITY, NORFOLK, VA
NORFOLK NAVAL SHIPYARD, NORFOLK, VA
WESTERN ROTO, RICHMOND, VA
MARTIN MARIETTA ARMAMENT SYSTEMS, BURLINGTON, VT
SIMMONDS PRECISION, VERGENNES, VT
BOEING, AUBURN, WA
N.U.W.E.S., KEYPORT, WA
BOEING-FABRICATION DIVISION, S.W. AUBURN, WA
BOEING, SEATTLE, WA
PRECISION ENGINEERING, SEATTLE, WA
HARRIS & GALLOB, BELGIUM, WI BRIGGS
AND STRATTON, GLENDALE, WI

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FACILITY NAME, LOCATION[a]
ULTRA PLATING CORP, GREEN BAY, WI
SNAP-ON TOOLS CORP, KENOSHA, WI
KOHLER CO, KOHLER, WI
JAGEMANN PLATING CO, MANITOWOC, WI
E.F. BREWER CO, MENOMONEE FALLS, WI
ACME GALVANIZING INC, MILWAUKEE, WI
ASTRA PLATING, INC, MILWAUKEE, WI
EASTON CORP, MILWAUKEE, WI
G.E. MEDICAL SYSTEMS, MILWAUKEE, WI
JOHNSON CONTROLS, INC, MILWAUKEE, WI
MILWAUKEE PLATING CO, MILWAUKEE, WI
RELIABLE PLATING WORKS, MILWAUKEE, WI
CHF INDUSTRIES, RACINE, WI
PRECISION MACHINE AND HYDRAULICS, INC, WORTHINGTON, WV

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APPENDIX C

RECORDKEEPING AND REPORTING FORMS

CONTENTS:

OPERATION AND MAINTENANCE CHECKLIST

(for composite mesh-pad systems or combination packed-bed scrubber/composite mesh-pad systems)

Applicable Rule: 40 CFR Part 63, Subpart N--National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks

Plant Name/Location: _____

Control Device ID #: _____

Installation Date: / /

Date of Last Performance Test: / /

Tanks Ducted to Control System:

Tank ID #	Type of tank (e.g., enclosed/open surface hard chrome, decorative chrome)

Inspection/Maintenance Checklist (insert inspector's initials in boxes):

Control Device Inspection	Date: / /	Date: / /	Date: / /	Date: / /
inlet and outlet transition zones				
spray nozzles				
packed-bed section				
mesh pads				
drain lines fan				
motor fan				
vibration				

OPERATION AND MAINTENANCE CHECKLIST (continued)

Monitoring Equipment Inspection	Date: _/_/_	Date: _/_/_	Date: _/_/_	Date: _/_/_
pressure lines connected				
pressure drop monitor calibrated				
Control Device Maintenance	Date: _/_/_	Date: _/_/_	Date: _/_/_	Date: _/_/_
washdown of pads				
other: (specify)[b]				

[b]Examples: replaced nozzles, adjusted fan motor, replaced recirculation pump, etc.

Corrective Actions:

Describe actions taken and maintenance performed to correct any deficiencies.

_____

_____

_____Date: _/_/_ Initials: _____Supervisor informed (Y/N): _

_____

_____

_____Date: _/_/_ Initials: _____Supervisor informed (Y/N): _

_____

_____

_____Date: _/_/_ Initials: _____Supervisor informed (Y/N): _

NOTE: THIS CHECKLIST CONTAINS ONLY THE MINIMUM REQUIREMENTS AND DOES NOT INCLUDE ALL OF THE SYSTEM CHECKS THAT NEED TO BE PERFORMED TO ENSURE PROPER OPERATION OF THE CONTROL SYSTEM. FACILITIES SHOULD INCORPORATE INFORMATION RECOMMENDED BY THE CONTROL SYSTEM VENDOR.

OPERATION AND MAINTENANCE CHECKLIST
(for packed-bed scrubbers)

Applicable Rule: 40 CFR Part 63, Subpart N--National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks

Plant Name/Location: _____

Control Device ID #: _____

Installation Date: / /

Date of Last Performance Test: / /

Tanks Ducted to Control System:

Tank ID #	Type of tank (e.g., enclosed/open surface hard chrome, decorative chrome)

Inspection/Maintenance Checklist (insert inspector's initials in boxes):

Control Device Inspection	Date: / /	Date: / /	Date: / /	Date: / /
inlet and outlet transition zones				
spray nozzles				
packed-bed section				
overhead weir				
drain lines fan				
motor fan				
vibration				
Monitoring Equipment Inspection	Date: / /	Date: / /	Date: / /	Date: / /

OPERATION AND MAINTENANCE CHECKLIST (continued)

pressure lines connected				
pressure drop monitor calibrated				
pitot tube[a]				
Control Device Maintenance	Date: _/_/_	Date: _/_/_	Date: _/_/_	Date: _/_/_
other: (specify)[b]				

[a]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.

[b]Examples: replaced nozzles, adjusted fan motor, replaced recirculation pump, etc.

Corrective Actions:

Describe actions taken and maintenance performed to correct any deficiencies.

_____

_____

_____Date: _/_/_ Initials: _____Supervisor informed (Y/N): _

_____

_____

_____Date: _/_/_ Initials: _____Supervisor informed (Y/N): _

_____

_____

_____Date: _/_/_ Initials: _____Supervisor informed (Y/N): _

NOTE: THIS CHECKLIST CONTAINS ONLY THE MINIMUM REQUIREMENTS AND DOES NOT INCLUDE ALL OF THE SYSTEM CHECKS THAT NEED TO BE PERFORMED TO ENSURE PROPER OPERATION OF THE CONTROL SYSTEM. FACILITIES SHOULD INCORPORATE INFORMATION RECOMMENDED BY THE CONTROL SYSTEM VENDOR.

OPERATION AND MAINTENANCE CHECKLIST

(for fiber-bed mist eliminators)

Applicable Rule: 40 CFR Part 63, Subpart N--National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks

Plant Name/Location: _____

Control Device ID #: _____

Installation Date: _/ /_

Date of Last Performance Test: _/ /_

Tanks Ducted to Control System:

Tank ID #	Type of tank (e.g., decorative chrome, chrome anodizing)

Inspection/Maintenance Checklist (insert inspector's initials in boxes):

Control Device Inspection	Date: _/ /_	Date: _/ /_	Date: _/ /_	Date: _/ /_
inlet and outlet transition zones				
spray nozzles fiber				
beds prefiltering				
device drain lines				
fan motor fan				
vibration				

OPERATION AND MAINTENANCE CHECKLIST (continued)

Monitoring Equipment Inspection	Date: _/_/_	Date: _/_/_	Date: _/_/_	Date: _/_/_
pressure lines connected				
pressure drop monitors calibrated				
Control Device Maintenance	Date: _/_/_	Date: _/_/_	Date: _/_/_	Date: _/_/_
washdown of fiber beds				
other: (specify)[a]				

[a]Examples: replaced nozzles, adjusted fan motor, replaced recirculation pump, etc.

Corrective Actions:

Describe actions taken and maintenance performed to correct any deficiencies.

_____

_____

_____Date: _/_/_ Initials: _____Supervisor informed (Y/N): _

_____

_____

_____Date: _/_/_ Initials: _____Supervisor informed (Y/N): _

_____

_____

_____Date: _/_/_ Initials: _____Supervisor informed (Y/N): _

NOTE: THIS CHECKLIST CONTAINS ONLY THE MINIMUM REQUIREMENTS AND DOES NOT INCLUDE ALL OF THE SYSTEM CHECKS THAT NEED TO BE PERFORMED TO ENSURE PROPER OPERATION OF THE CONTROL SYSTEM. FACILITIES SHOULD INCORPORATE INFORMATION RECOMMENDED BY THE CONTROL SYSTEM VENDOR.

MONITORING DATA FORM

Applicable Rule: 40 CFR Part 63, Subpart N--National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks

Plant Name/Location: _____

Air Pollution Control System: _____

Control System ID #: _____

Monitoring Data:

Pressure drop across system[a]		
Inches of H_2O column	Date recorded	Initials
Applicable range established during initial performance test: _____		

Velocity pressure of system inlet[b]		
Inches of H_2O column	Date recorded	Initials
Applicable range established during initial performance test: _____		

[a]Pressure drop monitoring is required for composite mesh-pad (CMP) systems, packed-bed scrubbers (PBS), combination PBS/CMS, and fiber-bed mist eliminators (including the upstream control device used to prevent plugging). A continuous strip recorder may be added to the ΔP monitor to continuously record pressure drop.

[b]Velocity pressure monitoring is required for PBS only.

MONITORING DATA FORM (continued)

Periods of Excess Emissions:

Start:____________________________
End:____________________________
Corrective action taken: ________________

Initials:____________________________

Start:____________________________
End:____________________________
Corrective action taken: ________________

Initials:____________________________

Start:____________________________
End:____________________________
Corrective action taken: ________________

Initials:____________________________

Start:____________________________
End:____________________________
Corrective action taken: ________________

Initials:____________________________

Start:____________________________
End:____________________________
Corrective action taken: ________________

Initials:____________________________

Start:____________________________
End:____________________________
Corrective action taken: ________________

Initials:____________________________

Start:____________________________
End:____________________________
Corrective action taken: ________________

Initials:____________________________

Start:____________________________
End:____________________________
Corrective action taken: ________________

Initials:____________________________

INITIAL NOTIFICATION REPORT

Applicable Rule: 40 CFR Part 63, Subpart N--National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks

1. Print or type the following for each plant in which chromium electroplating and/or chromium anodizing operations are performed.

Owner/Operator/Title _____

Street Address _____

City _____ State _____ Zip Code _____

Plant Name _____

Plant Phone Number _____

Plant Contact/Title _____

Plant Address (if different than owner/operator's):

Street Address _____

City _____ State _____ Zip Code _____

2. Complete this section for all affected tanks using a chromic acid bath. If only trivalent chromium baths are used at the facility, go to No. 3.

A. Complete the following table. If additional lines are needed, make copies of this page.

Tank ID #	Type of tank	Startup date[1]	Total installed rectifier capacity (amperes)	Description of parts plated	Applicable emission limit	Compliance date[2]

[1]New or reconstructed tanks with an initial startup date after 1/25/95 must submit a NOTIFICATION OF CONSTRUCTION/RECONSTRUCTION form and notify the Administrator of the date construction/reconstruction commenced and the actual startup date in accordance with 40 CFR 63.347(c)(2).

[2]Compliance dates for existing tanks (i.e., tanks for which operation commenced on or before 12/16/93):
Hard chromium plating tanks Y 1/25/97
Decorative chromium plating tanks Y 1/25/96
Chromium anodizing tanks Y 1/25/97
Compliance dates for new tanks (i.e., tanks for which construction or reconstruction commenced after 12/16/93): If initial startup occurred between 12/16/93 and 1/25/95 Y 1/25/95
If initial startup occurred after 1/25/95 Y upon startup

EXAMPLE RESPONSE:

Tank ID #	Type of tank	Startup date	Total installed rectifier capacity (amperes)	Description of parts plated	Applicable emission limit	Compliance date
1	Chrome anodizing	1/1/85	5,000	Aircraft landing gear	45 dynes/cm or 0.01 mg/dscm	1/25/97
2	Hard chrome plating	1/1/85	10,000	pistons	0.015 mg/dscm	1/25/97
3	Hard chrome plating	1/1/95	12,000	pistons	0.015 mg/dscm	1/25/95
4	Hard chrome plating	3/1/95	12,000	pistons	0.015 mg/dscm	3/1/95

B. Check the box that applies.

☐ Tanks are located at a facility that is a major source.
☐ Tanks are located at a facility that is an area source.

NOTE: A major source is a facility that emits greater than 10 tons per year of any one hazardous air pollutant (HAP) or 25 tons per year of multiple HAPs. All other sources are area sources. The major/area source determination is based on all HAP emission points inside the facility fenceline, not just the chromium electroplating and anodizing tanks.

C. Complete the following if hard chromium electroplating tanks are operated. Check the box(es) that apply.

☐ The maximum cumulative potential rectifier capacity of the hard chromium electroplating tanks is greater than or equal to 60 million amp-hr/yr. This was determined by taking the sum of the total installed rectifier capacity (amperes) multiplied by 8,400 hours/yr and by 0.7 for each tank.
☐ The maximum cumulative potential rectifier capacity of the hard chromium electroplating tanks is less than 60 million amp-hr/yr. This was determined by taking the sum of the total installed rectifier capacity (amperes) multiplied by 8,400 hours/yr and by 0.7 for each tank.
☐ Records show that the facility's previous 12-month cumulative current usage for the hard chromium electroplating tanks was less than 60 million amp-hr.

INITIAL NOTIFICATION REPORT (continued)

☐ The facility wishes to accept a Federally-enforceable limit of less than 60 million amp-hr/yr on the maximum cumulative potential rectifier capacity of the hard chromium electroplating tanks.

3. Complete this section for all decorative chromium electroplating tanks using a trivalent chromium bath. If only chromic acid baths are used at the facility, go to No. 4.

A. Complete the following table. If additional lines are needed, make copies of this page.

Tank ID #	Startup date[1]	Description of parts plated	Compliance date[2]

[1]New or reconstructed tanks with an initial startup date after 1/25/95 must submit a NOTIFICATION OF CONSTRUCTION/RECONSTRUCTION form and notify the Administrator of the date construction/reconstruction commenced and the actual startup date in accordance with 40 CFR 63.347(c)(2).

[2]Compliance date for existing tanks (i.e., tanks for which operation commenced on or before 12/16/93) Y 1/25/96

Compliance dates for new tanks (i.e., tanks for which construction or reconstruction commenced after 12/16/93): If initial startup occurred between 12/16/93 and 1/25/95 Y 1/25/95

If initial startup occurred after 1/25/95 Y upon startup

B. Provide a brief description of the trivalent chromium electroplating process used at your facility. Attach process flow diagrams for each plating line.

_____

_____

_____

_____

C. Check the box that applies.

☐ The trivalent process used at the facility incorporates a wetting agent.

☐ The trivalent process used at the facility does not incorporate a wetting agent.

INITIAL NOTIFICATION REPORT (continued)

D. List below (or attach a list of) the trivalent chromium bath components and clearly identify the wetting agent.

_____
_____
_____
_____
_____

4. Print or type the name and title of the Responsible Official for the plant:

_____

(Name) (Title)

A Responsible Official can be:

- The president, vice-president, secretary, or treasurer of the company that owns the plant;
- The owner of the plant;
- The plant engineer or supervisor;
- A government official if the plant is owned by the Federal, State, City, or County government; or
- A ranking military officer if the plant is located on a military base.

I Certify The Information Contained In This Report To Be Accurate And True To The Best Of My Knowledge.

_____ / /

(Signature of Responsible Official) (Date)

NOTIFICATION OF CONSTRUCTION/RECONSTRUCTION

Applicable Rule: 40 CFR Part 63, Subpart N--National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks

1. This form is being completed because (check box(es) that apply):

   ☐ A chromium electroplating and/or chromium anodizing tank is being constructed.
   ☐ A chromium electroplating and/or chromium anodizing tank is being reconstructed.

2. Print or type the following for each plant in which a chromium electroplating and/or chromium anodizing tank is being constructed or reconstructed.

   Owner/Operator/Title _____

   Street Address _____

   City _____ State _____ Zip Code _____

   Plant Name _____

   Plant Phone Number _____

   Plant Contact/Title _____

   Plant Address (if different than owner/operator's):

   Street Address _____

   City _____ State _____ Zip Code _____

3. Complete the following table for each tank for which construction or reconstruction is planned. If additional lines are needed, make copies of this page.

Tank ID #	Type of tank	Expected beginning date for const/reconst	Expected completion date for const/reconst	Anticipated startup date	Type of control technique to be used[1]	Control System ID #	Estimated total chromium emissions after control is applied[2]

[1]Attach design information from vendor, including design drawings and design capacity.
[2]Attach engineering calculations to support estimate. These calculations may be from the vendor. Emissions estimates should be expressed in units consistent with the emission limits in the regulation.

NOTIFICATION OF CONSTRUCTION/RECONSTRUCTION (continued)

EXAMPLE RESPONSE:

Tank ID #	Type of tank	Expected beginning date for const/reconst	Expected completion date for const/reconst	Anticipated startup date	Type of control technique to be used[1]	Control System ID #	Estimated total chromium emissions after control is applied[2]
1	Hard chrome plating	10/94	1/95	1/95	Composite mesh-pad system	5	0.01 mg/dscm
2	Decorative chrome plating	2/95	6/95	6/95	Wetting-agent fume suppressant	N/A	Will meet 45 dynes/cm

4. Check the box that will apply after construction/reconstruction occurs.

☐ Tanks are located at a facility that is a major source.
☐ Tanks are located at a facility that is an area source.

NOTE: A major source is a facility that emits greater than 10 tons per year of any one hazardous air pollutant (HAP) or 25 tons per year of multiple HAPs. All other sources are area sources. The major/area source determination is based on all HAP emission points inside the facility fenceline, not just the chromium electroplating and anodizing tanks.

5. Complete the following if hard chromium electroplating tanks are being constructed/reconstructed. Check the box(es) that apply.

☐ The maximum cumulative potential rectifier capacity of the hard chromium electroplating tanks is greater than or equal to 60 million amp-hr/yr. This was determined by taking the sum of the total installed rectifier capacity (amperes) multiplied by 8,400 hours/yr and by 0.7 for each tank.
☐ The maximum cumulative potential rectifier capacity of the hard chromium electroplating tanks is less than 60 million amp-hr/yr. This was determined by taking the sum of the total installed rectifier capacity (amperes) multiplied by 8,400 hours/yr and by 0.7 for each tank.
☐ Records show that the facility's previous 12-month cumulative current usage for the hard chromium electroplating tanks was less than 60 million amp-hr.
☐ The facility wishes to accept a Federally-enforceable limit of less than 60 million amp-hr/yr on the maximum cumulative potential rectifier capacity of the hard chromium electroplating tanks.

6. Attach a brief description of the proposed emission control technique(s), including design drawings, design capacity, and emissions estimates with supporting calculations.

7. If reconstruction is to occur, attach a brief description of the source and the components to be replaced.

NOTIFICATION OF CONSTRUCTION/RECONSTRUCTION (continued)

8. Complete the following if reconstruction is to occur, and the facility believes that there are economic or technical limitations to prevent the facility from complying will all relevant standards or requirements.

A. Attach a discussion of any economic or technical limitations of complying with the relevant standards or requirements. The discussion must be sufficiently detailed to demonstrate how these limitations will affect the facility's ability to comply.

B. Provide an estimate of the fixed capital cost of the replacements and of constructing a comparable entirely new source: Replacements $ _____ New source $ _____.

C. Provide the estimated life of the source after the replacements: _____

9. Print or type the name and title of the Responsible Official for the plant:

_____

(Name) (Title)

A Responsible Official can be:

- The president, vice-president, secretary, or treasurer of the company that owns the plant;
- The owner of the plant;
- The plant engineer or supervisor;
- A government official if the plant is owned by the Federal, State, City, or County government; or
- A ranking military officer if the plant is located on a military base.

I Certify The Information Contained In This Report To Be Accurate And True To The Best Of My Knowledge.

_____ _____

(Signature of Responsible Official) (Date)

NOTIFICATION OF PERFORMANCE TEST

(This notification is not required if you do not have to conduct a performance test under the regulation.)

Applicable Rule: 40 CFR Part 63, Subpart N--National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks

1. Print or type the following for each plant in which chromium electroplating and/or chromium anodizing operations are performed:

Owner/Operator/Title _____

Street Address _____

City _____ State _____ Zip Code _____

Plant Name _____

Plant Phone Number _____

Plant Contact/Title _____

Plant Address (if different than owner/operator's):

Street Address _____

City _____ State _____ Zip Code _____

2. Complete the following table. If additional lines are needed, make copies of this page.

Type of control technique	Control System ID #	ID # of tank ducted to control system	Type of tank	Date of performance test

NOTIFICATION OF PERFORMANCE TEST (continued)

EXAMPLE RESPONSE:

Type of control technique	Control System ID #	ID # of tank ducted to control system	Type of tank	Date of performance test
Composite mesh-pad system	10	1	Hard chrome plating	5/15/97
		2	Hard chrome plating	
		3	Hard chrome plating	
Packed-bed scrubber	11	4	Hard chrome plating	5/18/97
		5	Hard chrome plating	
Wetting agent fume suppressant	N/A	6	Chrome anodizing	none required

NOTIFICATION OF COMPLIANCE STATUS

Applicable Rule: 40 CFR Part 63, Subpart N--National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks

1. Print or type the following for each plant in which chromium electroplating and/or chromium anodizing operations are performed.

Owner/Operator/Title _____

Street Address _____

City _____ State _____ Zip Code _____

Plant Name _____

Plant Phone Number _____

Plant Contact/Title _____

Plant Address (if different than owner/operator's):

Street Address _____

City _____ State _____ Zip Code _____

2. Complete the following table. If additional lines are needed, make copies of this page.

Tank ID #	Type of tank	Applicable emission limit	Type of control technique	Control system ID #	Method to determine compliance[1]	Test method followed	Type and quantity of HAP emitted[2]

[1]If a performance test was conducted, submit the test report containing the elements required by 40 CFR 63.344(a).
[2]If the compliance procedures of 40 CFR 63.344(e) are being followed, attach the calculations needed to support the emission limit expressed in mg/hr.

EXAMPLE RESPONSE:

Tank ID #	Type of tank	Applicable emission limit	Type of control technique	Control system ID #	Method to determine compliance[1]	Test method followed	Type and quantity of HAP emitted[2]
1	Hard chrome plating	0.015 mg/dscm	Composite mesh-pad system	10	Performance test	EPA Method 306	Cr 0.009 mg/dscm
2	Chrome anodizing	45 dynes/cm	Wetting agent fume suppressant	N/A	Surface tension measurement	EPA Method 306B	Cr 40 dynes/cm
3	Decorative chrome plating	0.01 mg/dscm	Foam blanket	N/A	Performance test	EPA Method 306A	Cr 0.005 mg/dscm

NOTIFICATION OF COMPLIANCE STATUS (continued)

3. Complete the following table for each control technique used. If additional lines are needed, make copies of this page

Control system ID #	Tank ID #(s)	Range of site-specific operating parameter values[1]			
		Pressure drop	Velocity pressure	Surface tension	Foam blanket thickness

[1]If the applicable monitoring and reporting requirements to demonstrate continuous compliance differ from those in 40 CFR Part 63, subpart N, attach a description. Parameter value ranges are established through initial performance testing and are those that correspond to emissions at or below the level of the standard(s).

EXAMPLE RESPONSE:

Control system ID #	Tank ID #(s)	Range of site-specific operating parameter values[1]			
		Pressure drop	Velocity pressure	Surface tension	Foam blanket thickness
10	1	7 in. w.c. ± 1 in.	N/A	N/A	N/A
N/A	2	N/A	N/A	#45 dynes/cm	N/A
N/A	3	N/A	N/A	N/A	$1 inch

4. Complete the following if hard chromium electroplating tanks are operated (check the box(es) that apply):

- ☐ The maximum cumulative potential rectifier capacity of the hard chromium electroplating tanks is greater than or equal to 60 million amp-hr/yr. This was determined by taking the sum of the total installed rectifier capacity (amperes) multiplied by 8,400 hours/yr and by 0.7 for each tank.
- ☐ The maximum cumulative potential rectifier capacity of the hard chromium electroplating tanks is less than 60 million amp-hr/yr. This was determined by taking the sum of the total installed rectifier capacity (amperes) multiplied by 8,400 hours/yr and by 0.7 for each tank.
- ☐ Records show that the facility's previous annual actual rectifier capacity of the hard chromium electroplating tanks was less than 60 million amp-hr/yr. If so, submit the records that support this rectifier capacity for any 12-month period preceding the compliance date, or submit a description of how operations will change to meet this rectifier capacity limit. For new sources, the capacity can be that projected for the first 12-month period of tank operation.

NOTIFICATION OF COMPLIANCE STATUS (continued)

☐ The facility has accepted or will accept a Federally-enforceable limit of 60 million amp-hr/yr on the maximum cumulative potential rectifier capacity of the hard chromium electroplating tanks.

5. Check one of the following boxes that describes the facility's compliance status:

☐ The facility is in compliance with the provisions of 40 CFR part 63, subpart N.
☐ The facility is not in compliance with the provisions of 40 CFR part 63, subpart N.

6. Print or type the name and title of the Responsible Official for the plant:

_____

(Name) (Title)

A Responsible Official can be:

- The president, vice-president, secretary, or treasurer of the company that owns the plant;
- The owner of the plant;
- The plant engineer or supervisor;
- A government official if the plant is owned by the Federal, State, City, or County government; or
- A ranking military officer if the plant is located on a military base.

I Certify That An Operation And Maintenance Plan Has Been Completed And The Plan And Other Work Practice Standards Of 40 CFR 63.342(f) Are Being Followed.

_____ / /

(Signature of Responsible Official) (Date) I

I Certify That The Information Contained In This Report Is Accurate And True To The Best Of My Knowledge.

_____ / /

(Signature of Responsible Official) (Date)

ONGOING COMPLIANCE STATUS REPORT

Applicable Rule: 40 CFR Part 63, Subpart N--National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks

1. Print or type the following for each plant in which chromium electroplating and/or chromium anodizing operations are performed:

Owner/Operator/Title _____

Street Address _____

City _____ State _____ Zip Code _____

Plant Name _____

Plant Phone Number _____

Plant Contact/Title _____

Plant Address (if different than owner/operator's):

Street Address _____

City _____ State _____ Zip Code _____

2. Complete the following table. If additional lines are needed, make copies of this page.

Tank ID #	Type of tank	Applicable emission limit	Type of control technique	Control system ID #	Operating parameter monitored to demonstrate compliance	Acceptable value or range of values for monitored parameter(s)	Total operating time during reporting period

EXAMPLE RESPONSE:

Tank ID #	Type of tank	Applicable emission limit	Type of control technique	Control system ID #	Operating parameter monitored to demonstrate compliance	Acceptable value or range of values for monitored parameter(s)	Total operating time during reporting period
1	Hard chrome plating	0.015 mg/dscm	Composite mesh-pad system	10	pressure drop	7 in. w.c. ± 1 in.	1,040 hr
2	Chrome anodizing	45 dynes/cm	Wetting agent fume suppressant	N/A	surface tension	#45 dynes/cm	1,040 hr
3	Hard chrome plating	0.015 mg/dscm	Composite mesh-pad system	10	pressure drop	7 in. w.c. ± 1 in.	1,040 hr

ONGOING COMPLIANCE STATUS REPORT (continued)

3. Identify the beginning and ending dates of the reporting period:

   Beginning __/__/__ Ending __/__/__

4. For hard chromium electroplating tanks that are limiting their maximum cumulative rectifier capacity in accordance with 40 CFR 63.342(c)(2), complete the following table for this reporting period:

Tank ID #	Ampere-hours consumed by month						Total ampere-hours consumed during reporting period
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	
Total for all tanks							

EXAMPLE RESPONSE

Tank ID #	Ampere-hours consumed by month						Total ampere-hours consumed during reporting period
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	
1	400,000	400,000	400,000	200,000	200,000	200,000	1,800,000
3	300,000	300,000	300,000	300,000	300,000	300,000	1,800,000
Total for all tanks	700,000	700,000	700,000	500,000	500,000	500,000	3,600,000

5. Attach all MONITORING DATA FORMs for the reporting period. Based on the data on excess emissions and the data on operating times, calculate the following hours:

	Hours	Percent of total operating time
Duration of excess emissions caused by:		
Process upsets	_____	_____
Control equipment malfunctions	_____	_____
Other known causes	_____	_____
Unknown causes	_____	_____
Total duration of excess emissions	_____	_____

ONGOING COMPLIANCE STATUS REPORT (continued)

6. Check the box that applies.

   ☐ During this reporting period, the work practices identified in 40 CFR 63.342(f) were followed in accordance with the operation and maintenance plan for this source.
   ☐ During this reporting period, the work practices identified in 40 CFR 63.342(f) were not followed in accordance with the operation and maintenance plan for this source.

7. If the operation and maintenance plan was not followed during the reporting period, please provide an explanation of the reasons for not following the provisions in the plan, an assessment of whether any excess emissions and/or parameter monitoring exceedances are believed to have occurred, and a copy of the appropriate records documenting that the operation and maintenance plan was not followed. Please state whether or not the plan is being revised accordingly.

   _____
   _____
   _____
   _____

8. Please describe any changes in monitoring, processes, or controls since the last reporting period.

   _____
   _____
   _____

9. Print or type the name and title of the Responsible Official for the plant:

   _____

   (Name) (Title)

A Responsible Official can be:

- The president, vice-president, secretary, or treasurer of the company that owns the plant;
- The owner of the plant;
- The plant engineer or supervisor;
- A government official if the plant is owned by the Federal, State, City, or County government; or
- A ranking military officer if the plant is located on a military base.

I Certify That The Information Contained In This Report Is Accurate And True To The Best Of My Knowledge.

_____ ___/___/___

(Signature of Responsible Official) (Date)

TECHNICAL REPORT DATA

(Please read Instructions on reverse before completing)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
EPA-453/B-95-001		

4. TITLE AND SUBTITLE	5. REPORT DATE
A Guidebook on How to Comply with the Chromium Electroplating and Anodizing National Emission Standards for Hazardous Air Pollutants	April 1995 (Revised September 2004)
	6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.
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	14. SPONSORING AGENCY CODE EPA/200/04
15. SUPPLEMENTARY NOTES	

16. ABSTRACT

National emission standards to control emissions of chromium compounds from new and existing chromium electroplating and chromium anodizing tanks were promulgated under Section 112 of the Clean Air Act. This document presents guidance for businesses on how to comply with the regulation.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Air pollution control Anodizing Chromium Electroplating Environmental protection Hazardous air pollutants National emission standards	Air pollution control Chromium Stationary sources	

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS *(Report)*	21. NO. OF PAGES
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