Michigan Chrome NESHAP Guide

HARD CHROMIUM ELECTROPLATING

Michigan Department of Environmental Quality • Clean Air Assistance Program • (800) 662-9278

In This Guide

On January 25, 1995, the U.S. Environmental Protection Agency promulgated the National Emission Standard for Hazardous Air Pollutants for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks (Chrome NESHAP). Since then, the Chrome NESHAP has experienced several amendments. All the amendments have been included in this guide. The Chrome NESHAP affects all facilities that use chromium electroplating tanks, regardless of size. Activities your facility must do to comply with the Chrome NESHAP are dependent upon the size of the operation and the type of process (hard, decorative, or anodizing).

NOTE: This fact sheet will only focus on the issues that hard chromium electroplaters need to address due to the chrome NESHAP.

The Chrome NESHAP is published in Title 40, Part 63, Subpart N of the Code of Federal Regulations (40 CFR 63). Contact the Michigan Department of Environmental Quality (MDEQ) Clean Air Assistance Program (CAAP) for information on how to obtain a copy of the chrome NESHAP. See "Where to Go for Additional Help" on page 8 of this guide.

In general, the Chrome NESHAP contains six requirements:

1. Emission limits
2. Work practice standards
3. Performance testing
4. Monitoring
5. Recordkeeping
6. Reporting

The specific requirements for each hard chromium electroplating tank depend on the type of tank, the rectifier capacity, the date of startup, and whether the facility is a major source or an area.

APPLICABILITY TO THE NESHAP

All chromium electroplating located at a facility performing hard chromium electroplating is subject to the NESHAP. However, a tank is exempt from the Chrome NESHAP if it meets one of the following conditions:

- No chromium electroplating is actually taking place in the tank (e.g., rinsing tanks, etching tanks, and cleaning tanks).
- No electrolytic process occurs in the tank (e.g., a chrome conversion coating tank where no electrical current is applied).
- The tank is being used to conduct research or laboratory operations.

COMPLIANCE DATES

Existing tanks (initial startup on or before 12/16/93)
Existing chromium electroplating tanks had to comply with the Chrome NESHAP by January 25, 1997.

New tanks (initial startup after 12/16/93)
All new chromium electroplating tanks with an initial startup after January 25, 1995, are required to comply with the Chrome NESHAP immediately upon startup.

EMISSION LIMITS

The Chrome NESHAP specifies emission limits that facilities can typically achieve by using a certain control and monitoring technique to reduce emissions. Table 1 lists the emission limits and the emission reduction technique that corresponds to each emission limit.

Table 1. Emission Limits and Corresponding Control Techniques

AFFECTED TANK	EMISSION LIMIT[a]	CONTROL TECHNIQUE
Large existing tanks and all new tanks	0.015 mg/dscm (6.6×10^{-6} gr/dscf) **OR** 35 dynes/cm with tensiometer 45 dynes/cm with stalagmometer	Composite mesh-pad (CMP) system **OR** Fume suppressant (FS) that contains wetting agent
Small existing tanks[b]	0.03 mg/dscm (1.3×10^{-5} gr/dscf) **OR** 35 dynes/cm with tensiometer 45 dynes/cm with stalagmometer	Packed-bed scrubber (PBS) **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; and
dynes/cm = dynes per centimeter;

[b] Small means that the facility has a maximum potential rectifier capacity of less than 60 million ampere-hours per year or an actual rectifier capacity of less than 60 million ampere-hours per year demonstrated by using nonresttable meters.

WORK PRACTICE STANDARDS

The Chrome NESHAP specifies that all facilities must prepare an operation and maintenance plan. When developing this plan:

- Specify the operation and maintenance criteria for the tank, control technique, and monitoring equipment.
- Provide a checklist to document the operation and maintenance of the tank, control technique, and monitoring equipment.
- Incorporate work practice standards.
- Include a step-by-step procedure for identifying and correcting malfunctions.
- Specify procedures to be followed that will prevent malfunctions.

PERFORMANCE TESTING

Facilities subject to the Chrome NESHAP and demonstrating compliance with the 0.015mg/dscm for large and new tanks, and 0.03 mg/dscm for small existing tanks, must conduct an initial performance test to demonstrate compliance with the emission limit standard. Facilities opting to demonstrate compliance using the surface tension limit are not subject to initial performance testing requirements.

This is a one-time test. Performance tests for new tanks with a startup date after January 25, 1995, must be conducted within 180 days after startup. Facilities must notify the Air Quality Division (AQD) of the MDEQ of the testing date at least 60 days before the test and must submit a testing protocol.

Facilities must conduct the initial performance test using certain test methods and procedures listed in the Chrome NESHAP. Most facilities hire a testing service to conduct the test; however, the Chrome NESHAP allows facilities to perform their own testing. For additional information, contact the CAAP. See “Where to Go for Additional Help” on page 8 of this guide.

Following the initial performance test, a performance test report must be submitted to AQD that contains the following information:

- A description of the process
- Descriptions of the sampling locations
- 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 used during test
    - Calibration procedures

- Raw data sheets for:
  - Field sampling
  - Field and laboratory analysis
- Documentation of calculations
- Any additional information required by the test method

This report must be submitted to the AQD within 90 days after your initial performance test.

MONITORING

Facilities must demonstrate continuous compliance by monitoring an operating parameter value for each control technique. This value links the control technique with the operating limit and is established during the initial performance test. Facilities must begin monitoring on the date of their initial performance test. Table 2 is a summary of the monitoring requirements.

Table 2. Summary of Monitoring Requirements

CONTROL TECHNIQUE	OPERATING PARAMETER	MONITORING FREQUENCY	OPERATING LIMIT
Composite mesh-pad (CMP) system	Pressure drop across the system	Daily	± 2″ H_2O
Packed-bed scrubber (PBS)	Inlet velocity pressure ***and*** Pressure drop across the system	Daily	± 10% ***and*** ± 1″ H_2O
PBS/CMP system	Pressure drop across the system	Daily	± 2″ H_2O
Fiber-bed mist eliminator	Pressure drop across the fiber-bed mist eliminator ***and*** Pressure across the upstream control used to prevent plugging	Daily	± 1″ H_2O
Wetting agent-type fume suppressant	Surface tension	Every 40 hours of operation	35 dynes/cm with tensiometer 45 dynes/cm with stalagmometer
Foam blanket-type fume suppressant	Foam thickness	Hourly	1″
Other control device	To be proposed by facility	To be proposed by facility	

* dynes/cm = dynes per centimeter; and
lb_f/ft = pound-force per foot.

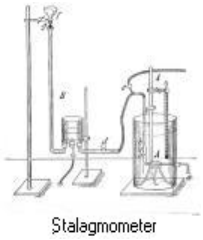
Surface Tension Monitoring

The surface tension shall be measured once every four hours during operation of the tank with a stalagmometer or a tensiometer as specified in Method 306B.


Tensiometer

The time between monitoring can be increased if there have been no exceedances. The surface tension shall be measured once every 4 hours of tank operation for the first 40 hours of tank operation after the compliance date. Once there are no exceedances during 40 hours of tank operation, surface tension measurement may be conducted once every 8 hours of tank operation. Once there are no exceedances during 40 hours of tank operation, surface tension measurement may be conducted once every 40 hours of tank operation on an ongoing basis until an exceedance occurs. The minimum frequency of monitoring allowed by this subpart is once every 40 hours of tank operation.

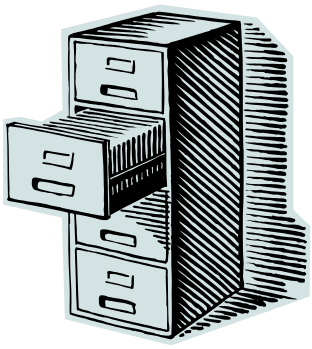
Once an exceedance occurs as indicated through surface tension monitoring, the original monitoring schedule of once every 4 hours must be resumed. A subsequent decrease in frequency shall follow the schedule laid out in the previous paragraph. For example, if an owner or operator had been monitoring an affected source once every 40 hours and an exceedance occurs, subsequent monitoring would take place once every 4 hours of tank operation. Once an exceedance does not occur for 40 hours of tank operation, monitoring can occur once every 8 hours of tank operation. Once an exceedance does not occur for 40 hours of tank operation on this schedule, monitoring can occur once every 40 hours of tank operation.


Stalagmometer

Once a bath solution is drained from the affected tank and a new solution added, the original monitoring schedule of once every 4 hours must be resumed, with a decrease in monitoring frequency allowed following the procedures addressed in the previous paragraph.

RECORDKEEPING

All facilities subject to the Chrome NESHAP must keep records to document compliance. The following records are required:



- ☐ Inspection records
- ☐ Maintenance records
- ☐ Malfunction records
- ☐ Performance test results
- ☐ Monitoring data
- ☐ Excess emission records
- ☐ Process records, including the following:
  - Operating time for each chromium electroplating tank.
  - For tanks using fume suppressants, the date and time that fume suppressants are added.
  - For small hard chromium tanks based on the actual rectifier capacity, the actual rectifier capacity expended by month, and the total capacity expended semiannually for major sources and annual for area sources.

All records should be kept at the facility for at least five years. For sample recordkeeping forms, contact the CAAP. See "Where to Go for Additional Help" on page 8 of this guide.

REPORTING

Every facility subject to the Chrome NESHAP must fulfill several reporting requirements. Table 3 summarizes what reports are required for each facility and the reporting deadline. Send all reports to the AQD district office for the district in which the facility is located. For reporting forms, contact the CAAP. See "Where to Go for Additional Help" on page 8 of this guide.

Table 3. Summary of Reporting Requirements

TYPE OF REPORT	FACILITIES THAT MUST REPORT	REPORTING DEADLINE
Initial notification report	Existing tanks	July 24, 1995
	New and reconstructed tanks	No later than 30 days after construction or reconstruction began
Performance test notification	All facilities conducting initial performance tests	At least 60 days before the test
Performance test results	All facilities conducting initial performance tests	No later than 90 days after the test
Notification of initial compliance status	Facilities conducting initial performance tests	No later than 90 days after the initial performance test
	Facilities not required to conduct initial performance test	No later than 30 days after the compliance date
Ongoing compliance status report	Major sources	Complete twice a year, or four times a year if exceedances occur or if requested.
	Area sources	Complete once a year, or two times a year if exceedances occur or if requested.
Notification of construction or reconstruction	All facilities	As soon as practical before construction or reconstruction is planned to begin.
Notification of when construction or reconstruction is commenced	All facilities	Within 30 days of beginning construction
Notification of actual startup	All facilities	Within 30 days of startup
Notification of process change	All facilities	No later than 30 days after the process change

AIR PERMITS

Electroplating facilities should be aware of two different air permit programs: the New Source Review program and the Renewable Operating Permit (ROP) program. The AQD administers both programs.

Permit to Install Program

Rule 201 of the Michigan Administrative Rules for Air Pollution Control requires a person to obtain an air permit before installing, relocating, or modifying a process that may emit air contaminants. For permitting questions, contact the CAAP. See "Where to Go for Additional Help" on page 8 of this guide.

Renewable Operating Permit (ROP) Program

A ROP consolidates all of a facility's air quality requirements into one document. All major sources must apply for an ROP. A major source is a facility that emits or has the potential to emit 10 tons per year or more of any hazardous air pollutant (HAP) or 25 tons per year or more of any combination of HAPs.

All operations subject to the Chrome NESHAP will be subject to the ROP program. If the chromium electroplating operation by itself is a major source or if it is located at a major source, apply for an ROP according to the schedule in Michigan Rule 210. If the chromium electroplating operation is not located at a major source and is not a major source by itself, apply for an ROP by December 9, 2005. For assistance in determining applicability to the ROP program, contact the CAAP. See "Where to Go for Additional Help" on page 8 of this guide.

AIR QUALITY FEES

The AQD has the authority to collect an annual air quality fee. Facilities subject to the fee include major sources (subject to the ROP program) and facilities subject to a NESHAP.

Under the fee program, facilities that are subject to a NESHAP but are not major sources are required to pay an annual air quality fee. Facilities that are major sources for HAPs are required to pay a facility charge plus an emission charge per ton of air contaminants emitted.

BENEFITS OF COMPLIANCE

Compliance with the Chrome NESHAP will reduce the public's exposure to hazardous air pollutants and keep chromium electroplating facilities operating within the law. Other incentives include:

- Improving air quality
- Maintaining good public relations
- Reducing waste
- Increasing worker safety

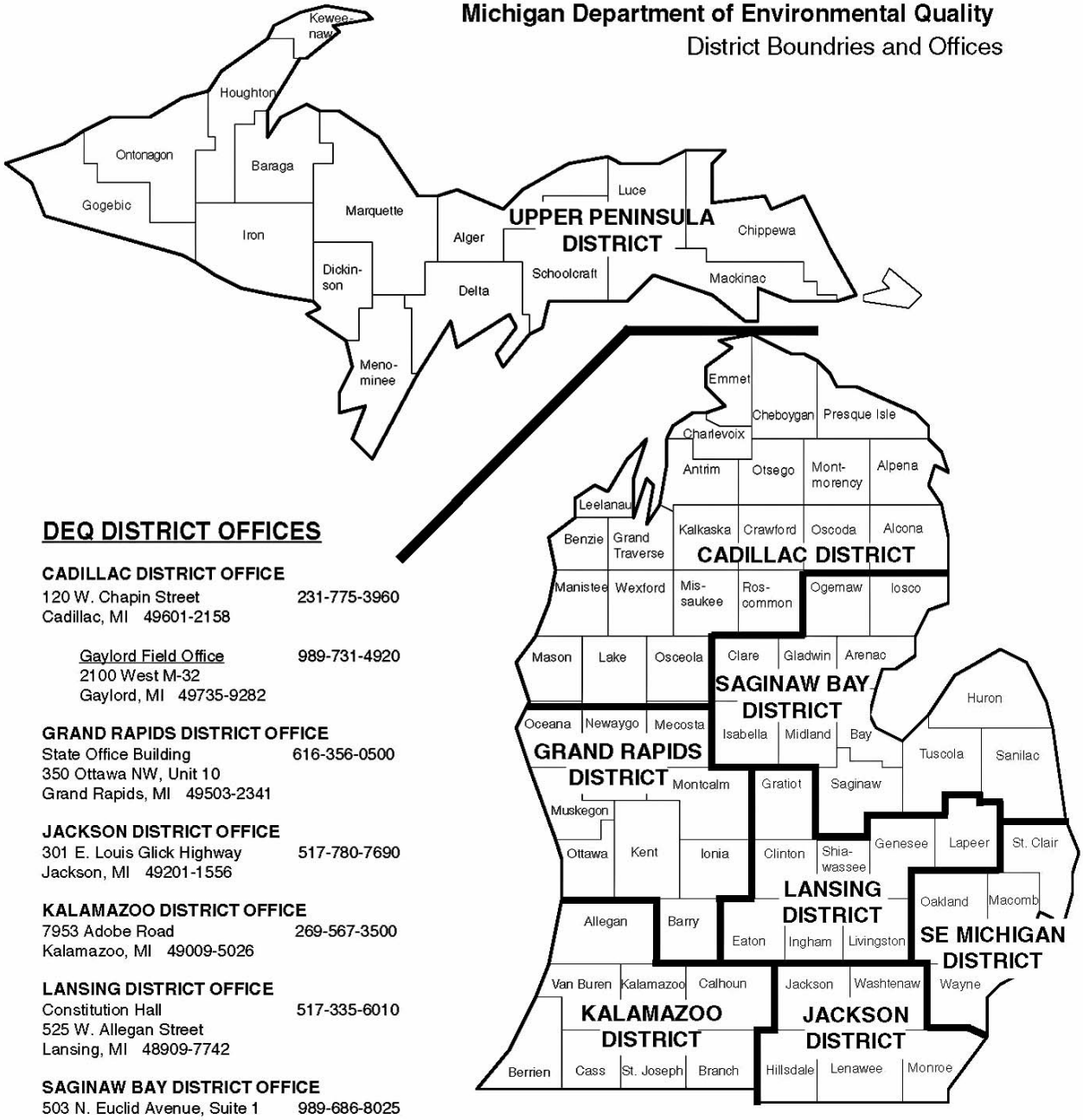
The Clean Air Act has strong enforcement provisions with both civil and criminal sanctions for violating the law.

WHERE TO GO FOR ADDITIONAL HELP

The Clean Air Assistance Program can provide copies of the chrome NESHAP, recordkeeping forms, and reporting forms. For questions regarding the Chrome NESHAP contact:

Clean Air Assistance Program
Environmental Science and Services Division
Department of Environmental Quality
P.O. Box 30457
Lansing, Michigan 49809-7957
800-662-9278
www.michigan.gov/deqair - Click on "Clean Air Assistance"

For location of your district office, see next page.



DEQ DISTRICT OFFICES

CADILLAC DISTRICT OFFICE
120 W. Chapin Street 231-775-3960
Cadillac, MI 49601-2158

Gaylord Field Office 989-731-4920
2100 West M-32
Gaylord, MI 49735-9282

GRAND RAPIDS DISTRICT OFFICE
State Office Building 616-356-0500
350 Ottawa NW, Unit 10
Grand Rapids, MI 49503-2341

JACKSON DISTRICT OFFICE
301 E. Louis Glick Highway 517-780-7690
Jackson, MI 49201-1556

KALAMAZOO DISTRICT OFFICE
7953 Adobe Road 269-567-3500
Kalamazoo, MI 49009-5026

LANSING DISTRICT OFFICE
Constitution Hall 517-335-6010
525 W. Allegan Street
Lansing, MI 48909-7742

SAGINAW BAY DISTRICT OFFICE
503 N. Euclid Avenue, Suite 1 989-686-8025
Bay City, MI 48706-2925

SOUTHEAST MICHIGAN DISTRICT OFFICE
27700 Donald Court 586-753-3700
Warren, MI 48092-2793

Detroit Field Office 313-456-4700
Cadillac Place
3058 West Grand Boulevard, Suite 2-300
Detroit, MI 48202-6058

UPPER PENINSULA DISTRICT OFFICE
420 5th Street 906-346-8300
Gwinn, MI 49841

ENVIRONMENTAL ASSISTANCE CENTER
(for general information):
Telephone: 800-662-9278
Fax: 517-241-0673

POLLUTION EMERGENCIES
Telephone: 800-292-4706

DEQ WEB PAGE
www.michigan.gov/deq

DEFINITIONS

Add-on air pollution control device: Equipment installed in the ventilation system of a chromium electroplating or anodizing tank for the purpose of collecting and containing chromium emissions from the tank.

Air pollution control technique: 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 anodizing tanks.

Area source: Any facility that emits less than 10 tons per year of any individual hazardous air pollutant (HAP) and less than 25 tons per year of any combination of HAPs.

Bath component: The trade or brand name of each component 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 can be used; however, the chemical name of the wetting agent contained in that component must be identified.

Chemical fume suppressant (or mist suppressant)**:** Any chemical agent that reduces or suppresses fumes or mists at the surface of an electroplating or anodizing bath.

Chromium anodizing: 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.

Chromium anodizing tank: The receptacle or container along with the following accompanying internal and external components needed voltage adjustments, heat exchanger equipment, circulation pumps, and air agitation systems.

Chromium electroplating tank: 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 system: 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: 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. The chromium process can be hexavalent or trivalent.

Electroplating or anodizing bath: The electrolytic solution used as the conducting medium in which the flow of current is accompanied by movement of metal ions for the purpose of electroplating metal out of the solution onto a work-piece or for oxidizing the base material.

Emission limitation: 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: 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.

Existing tank: Any tank that has an initial startup date on or before December 16, 1993.

Fiber-bed mist eliminator: An add-on air pollution control device that removes contaminants from a gas stream through the mechanism of inertial impaction and Brownian diffusion.

Foam blanket: 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. Foam blanket additives do not normally reduce the surface tension of the solution.

Hard chromium electroplating or industrial chromium electroplating: A process by which a thick layer of chromium (typically 1.3 to 760 microns) is electro-deposited on a base material to provide a surface with functional properties such as wear resistance, a low coefficient of friction, hardness, and corrosion resistance.

Hexavalent chromium: The form of chromium in a valence state of +6.

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

Major source: A facility that emits or has the potential to emit 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of HAPs.

Maximum cumulative potential rectifier capacity: The summation of the total installed rectifier capacity at a hard chromium electroplating facility (expressed in amperes) multiplied by the maximum potential operation schedule of 8,400 hours per year multiplied by 0.7 (this assumes that electrodes are energized 70% of the total operating time).

New tank: Any tank with an initial startup date after December 16, 1993.

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

Operating parameter value: A minimum or maximum value established for a control device or process parameter that, 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: 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 elimination to remove any water entrained from the packed-bed section.

Rectifier: A device that converts alternating current into direct current by permitting a considerable flow of current in one direction.

Research or laboratory facility: Any facility whose primary purpose it to conduct research and development into new processes and products. Operated under the close supervision of technically trained personnel, this facility does not manufacture products for commercial sale.

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

Surface tension: The property, due to molecular forces, that exists in the surface film of all liquids and tends to prevent liquid from spreading.

Trivalent chromium: The form of chromium in a valence state of +3.

Trivalent chromium process: 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: The type of chemical fume suppressant that reduces the surface tension of a liquid.

SUMMARY OF JULY 19, 2004 AMENDMENT

On July 19, 2004, the National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks (chrome NESHAP) was amended. **These amendments are final, enforceable, and effective as of July 19, 2004.** Five technical areas of the Chrome NESHAP were amended. They are:

1. The use of fume suppressants for controlling chromium emissions from hard chromium electroplating tanks.
2. A revised surface tension limit for decorative chromium electroplating tanks when measuring surface tension with a tensiometer.
3. An alternate emission limit for hard chromium electroplating tanks equipped with enclosing hoods.
4. Added definitions for chromium electroplating and chromium anodizing tanks.
   - Chromium anodizing tank means the receptacle or container along with the following accompanying internal and external components needed 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.
   - 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.
   - 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.
5. Revised definitions for chromium electroplating and chromium anodizing processes.
   - 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.
   - 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.
6. The pressure drop monitoring requirement for composite mesh pad (CMP) control systems.

NOTE: Within this publication we will address questions and answers associated with decorative chromium electroplating and chromium anodized tanks.

If you have any questions regarding the amended chrome NESHAP, contact the Clean Air Assistance Program (CAAP) at 1-800-662-9278.

FREQUENTLY ASKED QUESTIONS

I. AMENDMENTS (July 19, 2004)

How has the use of fume suppressants for controlling chromium emissions from hard chromium electroplating tanks changed?

The 0.015 mg/dscm emission limit can be achieved when the surface tensions of the electroplating tank bath is maintained below the limit of 45 dynes/cm when measured using a stalagmometer, and 35 dynes/cm when measured using a tensiometer for hard chromium electroplating tanks.

A facility may choose to use this new method to demonstrate compliance with the chrome NESHAP. The facility will be required to demonstrate compliance with the surface tension limit through the continuous compliance monitoring required by paragraph 63.343(c)(5)(ii). Initial performance stack testing is not required if using the surface tension monitoring as the compliance method.

Please note, a facility that has a Permit to Install (PTI) for the Chrome NESHAP subject process, which requires a control device, ***must continue to operate the control device*** *even if they elect to use the alternative surface tension monitoring to demonstrate compliance with the chrome NESHAP. The control device is required by the PTI.*

Additionally, if the facility chooses to use the surface tension option, the required Operational and Maintenance Plan may need to be modified to reflect the process monitoring changes.

What is the alternate emission limit for hard chromium electroplating tanks equipment with enclosing hoods?

An alternate mass emission rate limit established for chromium electroplating tanks equipped with enclosing hoods is allowed for an exiting enclosed hood hard chromium tank provided it is located at a small hard chromium electroplating facility. See 40 CFR 63.342(c)(2) for the details.

As with the open-top hard chromium electroplating tanks, the enclosed tank process may also demonstrate compliance using the surface tension limit of 45 dynes/cm when measured using a stalagmometer, and 35 dynes/cm when measured using a tensiometer.

What are the revised definitions for chromium electroplating tanks?

The definition of affected source has been amended to include the peripheral equipment, such as rectifiers and anodes, which is essential for the chromium electroplating process. The tank replacement of existing affected sources is considered routine maintenance and was not intended to be treated as reconstruction and potentially subject to emission limits for new sources. The definitions are as follows:

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.

What is the pressure drop monitoring requirement for composite mesh pad (CMP) control systems?

The amendment increased the allowable range of pressure drops from ±1" to ±2" for the requirements for establishing the operating limit for any source controlled with a CMP to demonstrate compliance with the chrome NESHAP.

If a facility chooses to use the ±2", a new performance test may be required to establish the new operating limit. See 40 CFR 63.343 for specific information pertaining to the requirement.

If the facility has a Permit to Install (PTI) with the requirement of the ±1", the facility will be required to have the PTI modified before using the ±2" operating limit.

II. APPLICABILITY TO THE CHROME NESHAP

What is the difference between "new" and "existing" tanks?

"New" chromium electroplating tanks means all chromium electroplating tanks that were constructed, reconstructed or installed after December 16, 1993. All facilities with an initial startup after December 16, 1993, but on or before January 25, 1995, were to comply with the emission limit standards, by January 25, 1995. All facilities with an initial startup after January 25, 1995, are required to comply with the emission standards immediately upon startup.

"Existing" tanks means all chromium electroplating tanks that were constructed, reconstructed or installed on or before December 16, 1993. "Existing" hard chromium electroplating should have been in compliance with the emission limit standards by January 25, 1997.

How does an area/major source designation relate to a small/large hard chromium electroplating facility?

There is not a relationship. The area/major source designation relates to potential HAPs emissions at a source (10 tons of one HAP/25 tons multiple HAPs). If the potential emissions of HAPs at a source are less than 10/25 tons, then the source is an "area" source. Conversely, a source could be a small hard chromium facility and be a "major" source if it has emissions at or above the 10/25 tons or emissions of any other regulated air contaminant over the 100 ton threshold limits.

Are research and lab operations exempt from compliance with the Chrome NESHAP rule? What other exemptions are there?

Yes, they are exempt. Other exemptions are as follows:

Process tanks associated with a chromium electroplating or chromium anodizing process, in which neither chromium electroplating nor chromium anodizing is taking place in the tank (e.g., rinse tanks, etching tanks and cleaning tanks).

Tanks that contain a chromium solution in which no electrolytic process occurs (e.g., chrome conversion coating tank where no electrical current is applied).

Facilities that perform chromium passivating.

Is phosphating subject to this Chrome NESHAP rule?

No.

The only chrome plating I do at my facility is plating tools as part of a tool maintenance operation. Is my facility considered exempt?

No. If a chromium electroplating operation is used to plate maintenance tools, it is an affected facility.

How is hard chrome defined in the regulation?

This term is described in 40 CFR 63.341 of subpart N and is as follows:

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 1,600 to 6,500 A/m2 for total plating times ranging from 20 minutes to 36 hours depending upon the desired plate thickness.

In hard hexavalent chrome electroplating, what approximate percent of the overall mists emitted into the air is hexavalent chromium?

The majority, if not all, of the emissions are hexavalent chromium.

How do I calculate the maximum cumulative potential rectifier capacity?

The maximum cumulative potential rectifier capacity is based on a maximum potential operation 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 chromium electroplating tanks ($\sum C_R$ in amperes) and multiply this sum by hours/year and 0.7, as shown here:

$$(\sum C_R)(8{,}400)(0.7) = \frac{\text{ampere} - \text{hours}}{\text{year}}$$

III. COMPLIANCE DATES

Where is more information available regarding extensions of compliance deadlines? Who reviews and decides on requests for extensions?

The general provisions of the Chrome NESHAP addresses requests for extensions; specifically, 40 CRF 63.61(1) Subpart A. Michigan has full delegation of authority to implement and enforce the standard. Contact your local MDEQ, AQD district office. Please refer to the MDEQ, AQD district map on page 9.

IV. EMISSION LIMITS

I understand hard chromium platers are not required to use fume suppressants. If they choose to use suppressants in addition to scrubbers, are they required to check the surface tension regularly?

Yes, only if both are required to meet the emission limit. If you only need the scrubbers to comply with the emission limit, then only monitor parameters associated with the scrubbers.

I am a "small" hard chromium facility in compliance at this time. If I add tanks to my facility and become a "large" hard chromium facility, do I have to be in compliance with the large chromium facility regulations immediately, or is there a grace period to come into compliance?

You must be in compliance within one year of the date of designation to a "large" hard chromium facility. See 40 CFR 63.343(a)(5) of subpart N for more details.

If a facility is using less than 60 million ampere hours of rectifier capacity, but has more than that connected, can they be a "small" hard chromium facility?

If this limit is enforceable by the State through their permit process and the source never operates above 60 million amperes, or if they use a non-resetable ampere-hour meter on the tank(s) and keep monthly records to show that the actual rectifier capacity is below 60 million ampere-hours, then the facility is considered a "small" hard chromium facility.

Do you retain liability from the date of compliance to the date you test your source? If so, would suggest testing prior to the compliance date?

You are out of compliance if you do not test within 180 days after the compliance date and show compliance.

Can an electric bill for the facility be used to demonstrate a maximum cumulative rectifier capacity of less than 60 million ampere hours per year (amp-hr/yr)?

*Yes, **if** a conversion is done and approved by the Michigan Department of Environmental Quality, Air Quality Division.*

Do regulations specify that you must have control devices on hard chromium tanks or that you must meet an emission standard?

Basically, you have to comply with the emission standard. There is flexibility as to how you do it.

If you have different types of plating tanks (affected sources and non-affected sources) vented to a common control device, how do you calculate your emission limit?

Multiple source emission limits are described in 40 CFR 63.344(e) of the subpart N (pages 4971 and 4972 of the January 25, 1995, Federal Register Notice.

V. PERFORMANCE TESTING

Can I perform my own initial performance testing?

Yes. The regulation contains U.S. Environmental Protection Agency (USEPA) Reference Methods 306 and 306A which are used to measure the chromium concentration discharged to the atmosphere. The California Air Resources Board (CARB) Method 425 may also be used to measure chromium emission 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 USEPA Reference Method 301. To obtain a video of how to conduct a Method 306A test, contact Robin Segall, Emission Measurement Center, Office of Air Quality Planning Standards, USEPA, at 919-541-0893.

If a facility has several chrome plating facilities in numerous states, does each individual tank have to be stack tested, or can they apply one or more tests to the remaining facility locations?

Each individual tank must be stack tested unless exempted from the chrome NESHAP.

When measuring emissions, does one measure the hexavalent chromium amount or the total chromium?

You can measure either hexavalent chromium or total chromium. The analysis used to measure hexavalent chrome is different than the one used to measure the total chromium.

The accuracy of USEPA Method 306-A has been described as plus or minus 50%. Would it be wise to do an initial test using this method to get in the ball park, and then use Method 306 to show final compliance?

When USEPA Methods 306-A and 306 are done properly, the results should be the same with a narrow range of error. Method 306-A has never been described as plus or minus 50%; it is just as accurate as Method 306. The plus or minus 50% is in reference to the early work done on the standard where the USEPA wanted a screening method that was plus or minus 50%. That screening method was never developed.

When stack testing is done to establish the operating parameter for a control device, does the magnehelic gauge (differential pressure device) display a range of several inches during the test?

*No. The magnehelic gauge may display a range of several **tenths** of an inch of water, not several inches.*

Should the facility perform multiple stack tests during multiple operating conditions?

If a facility has multiple operating conditions, the facility should demonstrate compliance under worst case operating conditions.

What is the effect on air flow and volume by using composite mesh pad at the end of the system?

A composite mesh pad functions as a restriction at the outlet so airflow will decrease. The increase in pressure drop may require a higher fan capacity.

VI. MONITORING

The final rule requires a facility to maintain records of the chrome electrolytic plating tank operating time. When does a tank's operating time begin; when the tanks are initially heated, or when they are being used and current is applied?

When the tanks are being used and current is applied.

As I understand it, I must monitor the surface tension of the chrome electrolytic plating tank once every four hours. Is this every four hours of plating tank operating time or every four hours the plating line is in operation?

Every four hours of plating tank operating time.

A facility that uses a wetting agent to maintain surface tension in their chrome bath operates for only five minutes a day. To comply with the continuous compliance requirements of the rule, the initial monitoring frequency must occur once every four hours of tank operation for the first 40 hours of tank operation. How should they monitor to maintain compliance?

The rule requires that they monitor the bath once every four hours for the first forty hours of tank operation. Given that they only operate the tanks five minutes a day:

4 hours = 240 min.
240 min./5 min. = 48 days
Technically, they should monitor a minimum of once every 48 days. However, for quality assurance aspects, monitoring the surface tension before each operation is recommended.

How much variation will be accepted in an operating parameter?

An affected source may establish a range of compliant operating parameter values, or may set as the compliant value, the average value over three test runs of once performance test. For example, in a composite mesh pad system, a ±2 inch of water column from the pressure drop value (average described above) may be accepted. In a packed-bed scrubber system, a ±2 inch of water column from the pressure drop value and ±10 percent from the velocity pressure value may be accepted as the compliant range. See 40 CFR 63.343(c)(1-7).

I am not familiar with the stalagmometer. How do I get more information about how to use this instrument?

Call the Clean Air Assistance Program, at 800-662-9278, for names of vendors. Vendors should be able to explain the instrument's use.

VII. REPORTING

Does the notification of construction requirements pertain solely to those tanks with an initial startup after January 25, 1995?

Yes. The notification of intent to construct or reconstruct must be submitted before construction or reconstruction begins.

Are facilities required to submit reports to both the USEPA and the MDEQ?

No, only to the MDEQ. Any information requested by the USEPA will be supplied by the MDEQ unless otherwise stated.

To whom do I submit my Initial Notification Form?

Submit your form to the local MDEQ, AQD district office. Please refer to the MDEQ, AQD district map on page 9.

VIII. AIR PERMITS

A. Permit To Install

If I submit a Permit to Install for a new chromium electroplating tank, will the state toxic rules require more stringent controls than the Maximum Achievable Control Technology (MACT) found in the chrome NESHAP?

Chromium electroplating sources are required to obtain a Permit to Install for chromium plating processes in accordance with Rule 201 of the Air Pollution Control Rules. Rule 201 requires evaluation of the initial risk screening level (IRSL) and initial threshold screening level (ITSL) of chemicals. It also considers what is Best Available Control Technology for toxics (T-BACT) and

modeling. It should be noted that the state toxic rules evaluation is risk based, while the MACT standard is technology based.

Since T-BACT is a site specific determination, the MACT standard contained within the NESHAP final rule may not always be accepted as T-BACT.

Do chromium electroplating tanks need a Permit to Install issued by the Air Quality Division of the MDEQ?

Rule 201 of the Michigan Administrative Rules for Air Pollution Control requires a person to obtain a Permit to Install prior to installation, relocation, or modification of a process that may emit air contaminants.

Many electroplating and anodizing facilities must operate a variety of processes, some of which are exempted from Rule 201 and others that require a Permit to Install. The Permit to Install exemptions are listed in Rules 278 through 290. Facilities that need a permit or have permitting questions should contact either the MDEQ, AQD's Permit section (517-373-2856) or the Michigan Clean Air Assistance Program (800-662-9278).

B. Title V – Renewable Operating Permit Program

Who is subject to the Renewable Operating Permit (ROP) program (Title V)?

According to the NESHAP final rule amended on December 14, 1999:

If you are the owner or operator of a source subject to the provisions of this subpart, you are also subject to title V permitting requirements under 40 CFR parts 70 or 71, as applicable. Your title V permitting authority may defer your source from these permitting requirements until December 9, 2004, if your source is not a major source and is not located at a major source as defined under 40 CFR 63.2, 70.2, or 71.2, and is not otherwise required to obtain a title V permit. If you receive a deferral under this section, you must submit a title V permit application by December 9, 2005. You must continue to comply with the provisions of this subpart applicable to area sources, even if you receive a deferral from title V permitting requirements.

For assistance in determining your facility's applicability with the ROP program, contact the Clean Air Assistance Program(800) 662-9278

What is the rationale for the Title V permits deferral?

The rationale for the 5-year deferral is basically to reduce the burden on the regulated sources and state permitting programs.

Are sources qualifying for the ROP deferral also obtaining a deferral from complying with the chrome NESHAP?

No. Only permit requirements are being deferred. Other requirements of the Chrome NESHAP apply as per the compliance schedule in the regulation.