

Final Rule

FINAL AIR TOXICS RULE FOR CHROMIUM EMISSIONS FROM HARD AND DECORATIVE ELECTROPLATING AND ANODIZING OPERATIONS

November 15, 1994

TODAY'S ACTION...

The Environmental Protection Agency (EPA) is issuing a final rule to reduce air toxics emissions from **chromium electroplating and anodizing operations**. Air toxics are those pollutants known or suspected of causing cancer or other serious illnesses.

Chromium electroplating and anodizing operations coat metal parts and tools with a thin layer of chromium to protect them from corrosion and wear. Air toxics are released during this process.

WHAT ARE THE HEALTH AND ENVIRONMENTAL BENEFITS?

The final rule will reduce emissions of chromium, an air toxic, by 173 tons annually, representing a 99% reduction.

There is strong evidence to conclude that hexavalent chromium causes lung cancer in humans.

WHY IS EPA REGULATING CHROMIUM ELECTROPLATING AND ANODIZING OPERATIONS?

Under the Clean Air Act Amendments of 1990, EPA is required to regulate emissions of 189 listed toxic air pollutants. On July 16, 1992, EPA published a list of source categories that emit one or more of these air toxics. For listed categories of "major" sources (those that emit 10 tons/year or more of a listed pollutant or 25 tons or more of a combination of pollutants), the Act requires EPA to develop standards that will require the application of maximum achievable control technology (MACT). "Area" sources are those that emit air toxics below the levels defined for major sources.

On July 16, 1992, EPA published a list of industry groups (known as "source categories") to be regulated, which included major and area sources of hard and decorative chromium electroplating and chromium anodizing operations.

WHO WILL BE AFFECTED BY THIS RULE?

There are an estimated 1,500 hard chromium electroplating facilities, 2,800 decorative chromium electroplating facilities, and 700 chromium anodizing facilities nationwide that will be affected by this regulation.

Hard chromium electroplated parts include large cylinders and industrial rolls used in construction equipment and in printing presses; decorative chromium plated parts include appliances such as toasters, various hand tools, and automotive parts; anodized parts include miscellaneous aircraft parts, including wings and landing gears.

The vast majority of the facilities covered by this rule electroplate parts for other industry manufacturers.

WHAT DOES THE FINAL STANDARD REQUIRE?

A major source is any chromium electroplating or anodizing operation that emits more than 9.1 megagrams of chromium compounds per year (Mg/yr) [10 tons per year (ton/yr)]. Sources that emit less than this cutoff value are considered area sources.

The majority of all chromium electroplating and anodizing sources are considered to be area sources.

Owners or operators of new hard chromium electroplating tanks would be required to meet an emission limit of 0.015 milligrams of total chromium per dry standard cubic meter (mg/dscm) (6.6×10^{-6} grain per dry standard cubic foot [gr/dscf]) of ventilation air. This standard is based on the application of the composite mesh-pad system.

Owners or operators of existing hard chromium electroplating tanks at facilities with maximum cumulative potential rectifier capacities less than 60 million ampere-hours per year (Ah/yr) would be required to meet an emission limit of 0.03 mg/dscm (1.3×10^{-5} gr/dscf), which is based on the application of packed-bed scrubbers.

Owners or operators of existing hard chromium electroplating tanks at facilities with maximum cumulative potential rectifier capacities greater than or equal to 60 million Ah/yr would be required to meet an emission limit of 0.015 mg/dscm (6.6×10^{-6} gr/dscf), which is based on the use of the composite mesh-pad system.

All new and existing decorative chromium electroplating tanks that use a chromic acid plating process would be required to: (1) meet a total chromium emission limit of 0.01 mg/dscm (4.4×10^{-6} gr/dscf); or (2) use a wetting agent type fume suppressant in the plating bath and maintain a bath surface tension no greater than 45 dynes per centimeter (dynes/cm) (3.1×10^{-3} pound force per foot [lbf/ft]).

All new and existing decorative chromium electroplating operations that use a trivalent chromium plating process that incorporates a wetting agent are required to notify EPA that the trivalent chromium process is being used, and must provide the bath components that comprise the trivalent chromium bath. Subsequent notification is required if a change is made to the bath such that a different standard applies to the tank.

All new and existing chromium anodizing operations would be required to: (1) meet an emission limit of 0.01 mg/dscm (4.4×10^{-6} gr/dscf); or (2) use a wetting agent type fume suppressant in the plating bath and maintain a surface tension of no greater than 45 dynes/cm (3.1×10^{-3} lbf/ft).

Monitoring Requirements

All owners or operators must conduct an initial performance test to demonstrate compliance with the emission limit unless the affected source is a decorative chromium electroplating or chromium anodizing tank that uses a wetting agent type fume suppressant and maintains a surface tension

of no greater than 45 dynes/cm (3.1×10^{-3} lbf/ft). During a performance test, the owner or operator must establish values for an operating parameter (e.g., pressure drop) that is subsequently monitored on a daily basis to ensure continued compliance. In the case of packed-bed scrubbers, pressure drop across the unit and the velocity pressure at the inlet to the control device must be monitored on a daily basis. In the case of composite mesh-pad and fiber-bed mist eliminator systems, pressure drop across the unit must be monitored on a daily basis. Operation of a control device outside of the operating parameter value ranges established in accordance with the rule is a violation of the standard.

All owners or operators that choose to comply with the emission limit by using a foam blanket must conduct an initial performance test to demonstrate compliance with the standard. Ongoing compliance is to be demonstrated by maintaining a foam blanket thickness of 2.5 centimeters (1 inch), or alternate thickness as established during the performance test. Foam blanket thickness is initially to be measured and recorded at least once every hour during tank operation. Monitoring frequency can decrease to once every 8 hours of tank operation, as allowed by the rule. Operation of the electroplating or anodizing tank below the acceptable foam blanket thickness constitutes noncompliance with the standard.

All owners or operators that choose to comply with the surface tension requirements must either establish system-specific surface tension limits through a performance test or adhere to the limits established by the standards. Surface tension is initially to be measured and recorded at least once every 4 hours during tank operation. Monitoring frequency can decrease to once every 40 hours of tank operation, as allowed by the rule. Operation of the electroplating or anodizing tank above the acceptable surface tension constitutes noncompliance with the standards.

Work practice standards require all owners or operators of affected tanks to prepare and follow an operation and maintenance plan to ensure that equipment or process malfunctions due to poor maintenance or other performance conditions do not occur.

Operation and maintenance plans require the following: a standardized checklist to document the inspection and maintenance of the equipment, a systematic procedure for identifying malfunctions, and procedures to be followed to ensure that equipment or process malfunctions due to poor maintenance or other preventable conditions do not occur. Owners/operators must perform quarterly inspections of the add-on air pollution control devices and monitoring equipment expected to be used to comply with the standards.

Recordkeeping/Reporting

The owner/operator of a tank that uses an add-on air pollution control device to meet an emission standard is required to maintain records of inspections and maintenance, daily velocity pressure and/or pressure drop readings, and any emission tests at the facility. All records should be maintained for a minimum of 5 years. Each inspection record would identify the device inspected and include the following: the date and approximate time of inspection, a brief description of the working condition of the device during the inspection, and any actions taken to correct deficiencies found during the inspection.

The owner/operator of a tank that uses a fume suppressant to comply with the standard would be required to maintain the following records at the facility for at least 5 years: the date and time of fume suppressant maintenance additions; the surface tension of the bath or measurements of foam blanket thickness, as applicable; and any emission tests to assure compliance with the standard. Each record of a surface tension measurement would identify the tank and include the date, approximate time, and measured surface tension. Each record of a foam blanket thickness measurement would identify the tank and include the date, approximate time, and measured thickness.

The owner/operator of a tank that uses a trivalent chromium plating process that incorporates a wetting agent would be required to maintain records of the bath chemicals purchased, with the wetting agent clearly identified as a bath component, for at least 5 years.

All owners or operators of affected tanks are required to submit an initial notification that the source is subject to the standards no later than 180 days after the effective date. A notification of compliance status, including the results of performance tests, must be submitted by all owners and operators no later than 90 days after the completion of the performance demonstration, or no later than 30 days after the compliance date if no performance test is required by the rule.

All owners or operators of any affected source, other than a decorative chromium electroplating tank that uses a trivalent chromium plating process, that is located at a major source site must submit semi-annual reports of the ongoing compliance status. If the affected source is located at an area source site, an ongoing compliance status report must be prepared annually and maintained onsite.

HOW MUCH WILL THE FINAL RULE COST?

For existing hard chromium plating operations, the total nationwide capital cost is projected to be about \$41 million. The nationwide annualized cost is estimated to be \$17 million. No capital costs or increased annualized costs are anticipated for existing decorative chromium plating operations and existing chromium anodizing operations.

FOR MORE INFORMATION...

... contact Lalit Banker at (919) 541-5420.