Updated Informative Digest

Proposed Amendments to the Airborne Toxic Control Measure for Chromium Electroplating and Chromic Acid Anodizing Operations

Sections Affected:

Proposed amendments to California Code of Regulations, title 17, section(s) 93102, 93102.1, 93102.2, 93102.3, 93102.4, 93102.5, 93102.6, 93102.7, 93102.8, 93102.9, 93102.10, 93102.11, 93102.12, 93102.13, 93102.14, 93102.15, 93102.16.

Background and Effect of the Proposed Regulatory Action:

CARB staff is proposing amendments to the Airborne Toxic Control Measure for Chromium Electroplating and Chromic Acid Anodizing Operations (Proposed Amendments). The Proposed Amendments are needed to further reduce health impacts from chrome plating facilities (which include decorative and hard chrome plating and chromic acid anodizing facilities) and to reduce exposures to hexavalent chromium in communities near these facilities.

Background

In 1986, CARB's Board identified hexavalent chromium as a toxic air contaminant (TAC)[1] under California law pursuant to Assembly Bill (AB) 1807[2] and Health and Safety Code section 39657.[3] Specifically, the Board identified hexavalent chromium as a TAC that has the potential to cause cancer with no associated threshold for cancer initiation. This means there is no level of emissions below which exposure to hexavalent chromium would be considered safe. Hexavalent chromium has the second highest cancer potency of identified TACs (second only to dioxin) and is about 500 times more toxic than diesel exhaust particulate matter (diesel PM).[4] Following the identification of hexavalent chromium as a TAC, CARB has taken action to reduce exposures to this hazardous chemical.

In 1988, the Hexavalent Chromium Airborne Toxic Control Measure for Chrome Plating and Chromic Acid Anodizing Operations (Chrome Plating ATCM) was adopted to reduce hexavalent chromium emissions from these operations. The Chrome Plating ATCM reduced overall emissions by requiring add-on pollution control devices such as High Efficiency Particulate Air (HEPA) filters, packed bed scrubbers, and chemical fume suppressants.

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[1] *CARB Identified Toxic Air Contaminants*

[2] AB 1807 (Chapter 1047, Statutes of 1983) – *Toxics Air Contaminant Identification and Control*

[3] *California Health and Safety Code 39657*

[4] *Consolidated Table of OEHHA/CARB approved health values*

In 1998, the Board adopted amendments to the Chrome Plating ATCM to establish equivalency with the federal regulation for chrome plating (1995 Chrome Plating National Emission Standards for Hazardous Air Pollutants (NESHAP)). These amendments did not change the limits already in place but established separate limits for new sources.

In 2007, to further protect the public and to address improvements in emission control technologies and emission reduction practices, CARB adopted additional amendments to the Chrome Plating ATCM. The amendments were the most stringent and health-protective emission standards applicable to chrome plating operations in the nation. However, since that time, CARB staff found that people living near many of these facilities are still being exposed to unacceptable concentrations of hexavalent chromium.

In July 2017, Assembly Bill (AB) 617 (Chapter 136, Statutes of 2017), was signed into California law to address local air pollution in environmental justice (EJ) communities. As mandated under AB 617, the local air quality management districts (Districts) must develop and adopt a Community Emission Reduction Plan (CERP) for each selected community, in consultation with CARB, community members, and other stakeholders in the affected community. AB 617 CERPs identified chrome plating operations as a concern for some communities. Through the CERP process and EJ listening sessions, CARB staff found that people living near many of these facilities are concerned about exposure to elevated concentrations of hexavalent chromium.

Past ambient air monitoring demonstrated elevated levels of hexavalent chromium near chrome plating facilities. Evaluation of facility location has shown that sensitive receptors such as schools and residents are often located in close proximity to chrome plating facilities. Approximately 15% of all chrome plating facilities are located within approximately 300 meters of a school. The data also show that chrome plating facilities are often located in low income and racially diverse communities.

Based on staff's analysis, approximately 73% of California's chrome plating facilities are located within Senate Bill (SB) 535 (Chapter 830, Statutes of 2012), communities.[5] SB 535 requires the California Environmental Protection Agency to identify disadvantaged communities for investment opportunities, based on geographic, socioeconomic, public health, and environmental hazard criteria. To implement this statute, the CalEnviroScreen 4.0 tool[6] identifies disadvantaged communities as those that receive scores of 75% to 100%. Additionally, approximately 14% of chrome plating facilities are located within communities with high cumulative exposure burdens from toxic air contaminants and criteria air pollutants selected by the Board under AB 617. AB 617 directs CARB to consider communities for selection based on criteria outlined in the statute and the Community Air Protection Blueprint and includes prioritizing disadvantaged communities and sensitive receptor locations.

The Proposed Amendments will result in the most stringent regulation of hexavalent chromium emissions from the chrome plating industry (compared to federal standards and local District rules), with the goal of eliminating toxic hexavalent chromium emissions from the chrome plating industry in California over time. Due to the high level of toxicity of hexavalent chromium, the health impacts of exposure to hexavalent chromium, the proximity of chrome plating

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[5] *Senate Bill (SB) 535 California Global Warming Solutions Act of 2006 Greenhous Gas Reduction Fund*
[6] *CalEnviroScreen/ OEHHA*

facilities near sensitive receptors and disadvantaged communities, and following evaluation of hexavalent chromium air monitoring data, the Board determined in Resolution 23-16 that a zero-emission level is necessary to prevent an endangerment of public health. As such, the Proposed Amendments phase out the use of hexavalent chromium from the chrome plating industry in California.

Effect of the Proposed Amendments

The Proposed Amendments are intended to eliminate emissions of hexavalent chromium from chrome plating facilities and to encourage the development of alternative technologies to replace hexavalent chromium. The Proposed Amendments will also begin to address cumulative exposures to hexavalent chromium within communities that could be impacted by multiple chrome plating operations. The requirements of the Proposed Amendments become effective in stages as follows:

Starting January 1, 2024:

- No person shall construct or operate a new chrome plating facility that uses hexavalent chromium in California (applies to decorative and functional chrome plating facilities).
- Owners or operators of existing chrome plating facilities may modify their facilities after January 1, 2024, if they do not exceed permitted throughput levels in place as of January 1, 2024, and as long as any additional or modified hexavalent chromium tanks meet all applicable requirements.
- Owners or operators of chrome plating facilities that use hexavalent chromium shall implement the applicable housekeeping practices to reduce fugitive emissions.

By July 1, 2024:

- Additional hexavalent chromium containing tanks that were not included in the 2007 ATCM become subject to the Proposed Amendments.
- Owners or operators of functional chrome plating facilities shall control hexavalent chromium emissions from Tier II tank(s) by utilizing a tank cover, mechanical fume suppressant or other method approved by District. Alternatively, they can comply with the applicable emission limit using an add-on air pollution control device.
- Owners or operators of functional chrome plating facilities shall cover the entire surface area of Tier III tank(s) until an add-on air pollution control device that meets the applicable emission limitation has been installed as required by the Proposed Amendments.
- Owners or operators of chrome plating facilities that use hexavalent chromium shall implement the best management practices to reduce fugitive emissions.

By January 1, 2025

- Owners or operators of decorative chrome plating facilities that elect to pursue the alternative phase out pathway shall submit a notification to the District indicating that they are electing to pursue the alternative phase out pathway with a phase out date of January 1, 2030.

By January 1, 2026

- Owners or operators of decorative chrome plating facilities electing to comply with the alternative phase out pathway must meet the building enclosure requirements for Tier I tanks, Tier II tanks, Tier III tanks, and buffing, grinding, and polishing operations.
- Owners or operators of functional chrome plating facilities must meet the following requirements:
    - Building enclosure requirements for Tier I tanks, Tier II tanks, Tier III tanks, and buffing, grinding, and polishing operations.
    - New emission limit of 0.00075 mg/ampere-hour for each chrome plating tank that uses hexavalent chromium.
    - Best management practices that apply beginning January 1, 2026.
    - Conduct an initial source test on Tier III tank(s) to determine compliance with hexavalent chromium emission rates and continue to conduct ongoing source tests every 2 calendar years.

By January 1, 2027

- Owners or operators of decorative chrome plating facilities not electing to pursue the alternative phase out pathway must stop using hexavalent chromium for the purpose of decorative chrome plating unless they are granted a one-year extension by the District.

By January 1, 2030

- Owners or operators of decorative chrome plating facilities electing to pursue the alternative phase out pathway must stop using hexavalent chromium for the purpose of decorative chrome plating unless they are granted a one-year extension by the District.

By January 1, 2032:

- CARB staff must complete the first technology review on alternatives to hexavalent chromium in functional plating.

By January 1, 2036:

- CARB staff must complete the second technology review on alternatives to hexavalent chromium for functional chrome plating.

By January 1, 2039:

- Owners or operators may no longer use hexavalent chromium for the purpose of functional chrome plating.

Based on the results of the technology reviews, CARB staff may recommend amendments to the phase out dates for Board consideration.

Objectives and Benefits of the Proposed Regulatory Action:

Objectives

The main objectives of the Proposed Amendments are as follows: reduce emissions of hexavalent chromium prior to the phase out; eliminate emissions of hexavalent chromium from chrome plating operations in California following the phase out; reduce health impacts in communities near chrome plating facilities; and encourage the development of safer alternative technologies to replace hexavalent chromium.

Benefits

The primary benefits of the Proposed Amendments are reductions in hexavalent chromium emissions from chrome plating facilities and reductions in potential cancer risk. CARB staff estimated the emission reductions of hexavalent chromium over the lifetime of the Proposed Amendments. The emission reduction benefits were evaluated from 2026 to 2043 to account for a period of five years after full implementation.

The emission reduction benefits (not including fugitive emissions) were estimated using the current emission level requirements and the emission reductions based on the Proposed Amendments. For decorative plating operations, CARB staff estimated hexavalent chromium emission reductions of 18.4 pounds (lbs.). For hard chrome plating operations, CARB staff estimated total emission reductions of 96.4 lbs. For chromic acid anodizing operations, staff estimated total emission reductions of 2.3 lbs. over the analysis period. These emission reductions will benefit California residents by reducing potential cancer risk from decreased exposure to hexavalent chromium. While there is no current methodology for quantifying a monetized benefit in the reduction of cancer risk, the phase out is expected to decrease the potential cancer risk from exposure to hexavalent chromium from chrome plating operations to zero by the year 2039.

In addition, as a co-benefit, the usage and emissions of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) containing fume suppressants are expected to be reduced to zero by the time the Proposed Amendments are fully implemented due to the transition to existing alternative technologies that do not use PFAS-containing fume suppressants. Exposure to PFAS in the environment may be linked to harmful health effects in humans and animals. These toxic substances can be found in many places such as: water, air, fish, soil, wildlife, and different consumer, commercial, and industrial products.

The phase out of hexavalent chromium is intended to protect public health and incentivize the development of safer alternatives to hexavalent chromium in chrome plating operations. As more facilities begin using safer technologies, such as trivalent chromium, industry acceptance of these technologies is expected to improve. Although alternative technologies are not currently available to replace all applications in functional chrome plating operations, the Proposed Amendments are anticipated to encourage design, research, engineering, construction, and project management firms to improve trivalent chromium technology and develop new technologies. More information on alternative technologies can be found in the Chapter III of the Initial Statement of Reasons (ISOR).

Public Process

To ensure an open and transparent rulemaking, CARB staff have engaged in an extensive public process since the development of the Proposed Amendments. On June 8, 2018, CARB staff issued a regulatory notice to inform the public of the start of the rulemaking process to amend the 2007 Chrome Plating ATCM. Since that time, CARB staff conducted seven technical workgroup meetings and two public workshops to solicit stakeholder feedback and discuss regulatory concepts, costs, technology alternatives, emission inventory estimates, health and environmental impacts, compliance, and source testing results. Staff posted information regarding these technical working group meetings and workshops and any associated materials on the Chrome Plating website and distributed notice of these meetings through the Chrome Plating List Serve, which includes over 3,400 recipients.

In addition, CARB staff conducted numerous meetings and phone calls with members of impacted communities, environmental justice advocates, local Districts, and industry stakeholders (including owners and operators of chrome plating facilities, chemical fume suppressants suppliers, equipment manufacturers (OEMs), and trade associations). CARB staff also had discussions with other state agencies, the United States Environmental Protection Agency (U.S. EPA), and other interested parties. CARB staff visited about 30 chrome plating facilities to learn more about their business operations and to better understand potential implementation challenges associated with the Proposed Amendments. A detailed summary of all stakeholder outreach activities is included in Chapter XII and Appendix E of the ISOR.

Description of Regulatory Action

On November 29, 2022, CARB released the Notice of Public Hearing (45-Day Notice) and Staff Report: Initial Statement of Reasons for Rulemaking (ISOR), titled “Public Hearing to Consider the Proposed Amendments to the Airborne Toxic Control Measure for Chromium Electroplating and Chromic Acid Anodizing Operations,” for public review. The ISOR contains a description of the rationale for the proposed amendments. On November 29, 2022, all references relied upon and identified in the ISOR were made available to the public. CARB received 81 written comments during the 45-Day Notice comment period.

On January 27, 2023, CARB conducted a public hearing. CARB staff informed the Board of the Proposed Amendments to the Airborne Toxic Control Measure for Chromium Electroplating and Chromic Acid Anodizing Operations, and the Board received written and oral comments from the public.

The Board directed the Executive Officer to make conforming modifications to the Proposed Amendments and to make these changes as well as any additional supporting documents and information, available to the public for a period of at least 15 days. The Board further provided that the Executive Officer shall consider such written comments as may be submitted during this period, shall make such modifications as may be appropriate in light of the comments received, and shall present the regulations to the Board for further consideration if warranted.

Subsequent to the hearing, CARB released a Notice of Public Availability of Modified Text and Availability of Additional Documents and Information on March 27, 2023 (First 15-Day Notice). On April 26, 2023, CARB released a second Notice of Public Availability of Modified Text and Availability of Additional Documents and Information (Second 15-Day Notice). The text of the First 15-Day Notice and the Second 15-Day Notice, as well as all proposed regulatory and staff

report modifications, were posted on CARB's website at *https://ww2.arb.ca.gov/rulemaking/2023/chromeatcm2023*, accessible to all stakeholders and interested parties.

The written responses to the Draft Environmental Analysis (EA) and the Final EA were posted for public review on May 19, 2023. On May 24, 2023, CARB posted a revised Response to Comments on the Draft Environmental Analysis. On May 25, 2023, CARB conducted the second public hearing on the Proposed Amendments. At this hearing, staff presented the revised proposal for Board consideration. The Board received written and oral comments from the public and voted to adopt the Proposed Amendments via Resolution 23-16, including the Final EA and Response to Comments on the Draft EA.

On August 9, 2023, CARB submitted the Final Statement of Reasons (FSOR) for the rulemaking action entitled "Public Hearing to Consider the Proposed Amendments to the Airborne Toxic Control Measure for Chromium Electroplating and Chromic Acid Anodizing Operations" and all other rulemaking documents for the Proposed Amendments to the Office of Administrative Law (OAL) for its review and approval. On September 20, 2023, CARB withdrew the rulemaking from OAL's consideration.

On October 16, 2023, a Third Notice of Public Availability of Modified Text and Availability of Additional Documents and Information and Proposed Third 15-Day Modifications to the Proposed Regulation Order were posted for a public review and comment period through October 31, 2023. The proposed Third 15-Day Modifications provide greater clarity and enforceability to the Proposed Amendments and ensure that the Proposed Amendments are consistent with the Board's direction and the intent of the original rulemaking proposal as stated in the Initial Statement of Reasons (ISOR) released on November 29, 2022, to phase out hexavalent chromium. The Third 15-Day Modifications were made accessible to all stakeholders and interested parties. CARB received seven written comments during the third 15-day public comment period. Staff determined that the third 15-day changes did not change implementation of the Proposed Amendments in any way that affects the conclusions of the Final EA certified by the Board on May 25, 2023, therefore no additional environmental analysis was required.

Comparable Federal Regulations:

In January 1995, U.S. EPA promulgated the Chromium Plating NESHAP[7] (40 Code of Federal Regulations Part 63, Subpart N). The Chromium Plating NESHAP was enacted because U.S. EPA identified chrome plating tanks as significant emitters of chromium compounds, which are hazardous air pollutants. This regulation established concentration standards for hard chrome plating facilities that could be met by the addition of forced ventilation systems. However, add-on air pollution control devices were not necessarily required in order for the hard chrome plating facilities to meet the concentration standards. In addition, the surface tension standards were established for decorative chrome plating facilities and chromic acid anodizing facilities.

On July 19, 2004, U.S. EPA amended the Chromium Plating NESHAP to allow the use of chemical fume suppressants to control chromium emissions; to provide an alternative standard

[7] *National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks*

for hard chrome plating tanks equipped with enclosed hoods; to modify surface tension parameter testing; to expand the definition of “chromium electroplating and anodizing” to include the ancillary hardware associated with the plating process, “add-on” control equipment, rectifier, process tanks, ductwork; and to amend the pressure drop for composite mesh pads to ±2 inches of water column instead of ±1 inch of water column.

On September 19, 2012, U.S. EPA further amended the Chromium Plating NESHAP to include revisions to the emission limits for total chromium, incorporate housekeeping requirements to reduce emissions not released from a stack (i.e., fugitive emissions), and phase out the use of chemical fume suppressants that use perfluorooctane sulfonic acid (PFOS).[8] PFOS is an organic chemical identified as being potentially carcinogenic[9] with health and safety concerns and is classified as one of the PFAS compounds.

An Evaluation of Inconsistency or Incompatibility with Existing State Regulations (Gov. Code, § 11346.5, subd. (a)(3)(D)):

During the process of developing the proposed regulatory action, CARB staff conducted a search of any similar regulations on this topic and concluded these regulations are neither inconsistent nor incompatible with existing state regulations.

[8] PFOS - Perfluorooctane sulfonic acid (CAS No. 1763-23-1) is a compound that has been banned by the U.S. EPA and was used in fume suppressants in California prior to 2016. This compound is considered to be highly toxic and persistent in the environment. EPA took action in banning this compound for use in its chrome plating regulation.

[9] *EPA Health Effect Support Document for PFOS*