California Air Resources Board

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

Staff Report: Initial Statement of Reasons

Date of Release: November 29, 2022

Scheduled for Consideration: January 26, 2023

This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the California Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Table of Contents

List of Tables

List of Figures

List of Abbreviations and Acronyms

$\mu g/m^3$	Microgram Per Cubic Meter
amp	Ampere
AB	Assembly Bill
APCD	Air Pollution Control District
AQMD	Air Quality Management District
ATCM	Airborne Toxic Control Measure
BACT	Best Available Control Technology
Board	California Air Resources Board
CAA	Clean Air Act
CalEPA	California Environmental Protection Agency
CalOSHA	California Division of Occupational Safety and Health
CAPP	Community Air Protection Program
CARB	California Air Resources Board
CERP	Community Emissions Reduction Program
CMP	Composite Mesh-Pad System
CFR	Code of Federal Regulations
CTR	Criteria Pollutant and Toxics Reporting Regulation
Cr (VI)/Cr_6	Hexavalent Chromium
DOD	U.S. Department of Defense
DOF	California Department of Finance
DTSC	Department of Toxic Substances Control
EA	Environmental Analysis
EICG	Emission Inventory Criteria and Guidelines
EJ	Environmental Justice
EF	Emission Factor
EO	Executive Officer, CARB
EU	European Union
H_2O	Water
HAP	Hazardous Air Pollutant
hr	Hour
HRA	Health Risk Assessment
ISOR	Initial Statement of Reasons
lbs	Pounds
MATES IV	Multiple Air Toxics Exposure Study IV
MATES V	Multiple Air Toxics Exposure Study V
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
mg	Miligram
mg/dscm	Miligrams per Dry Standard Cubic Meter
MIL-SPEC	Military Specifications
NAAQS	National Ambient Air Quality Standards
NDAA	National Defense Authorization Act
NESHAP	National Emission Standards for Hazardous Air Pollutants

OEHHA	Office of Environmental Health Hazard Assessment
OEM	Original Equipment Manufacturer
PBS	Packed Bed Scrubber
PFAS	Perfluoroalkyl and Polyfluoroalkyl Substances
PM	Particulate Matter
PM2.5	Fine Particulate Matter (≤2.5 micrometer in diameter)
ppb	Parts Per Billion
ppm	Parts Per Million
REACH	European Union Registration, Evaluation, Authorization, and Restriction of Chemicals Regulation
REL	Reference Exposure Level
REMI	Regional Economic Models, Inc.
SB	Senate Bill
SB 535	Senate Bill 535 (De Leon, Chapter 830, Statutes of 2012)
SRIA	Standardized Regulatory Impact Assessment
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminant
TSA	Tartaric Sulfuric Acid
U.S.	United States
U.S. EPA	United States Environmental Protection Agency

Executive Summary

A. Purpose of the Rulemaking

The California Air Resources Board (CARB) is proposing amendments (Proposed Amendments) to the Airborne Toxic Control Measure for Chromium Electroplating and Chromic Acid Anodizing Operations (Chrome Plating ATCM or ATCM).[1] There are two types of facilities covered by the Proposed Amendments: (1) decorative chrome plating, and (2) functional chrome plating, which include both hard chrome plating, and chromic acid anodizing (collectively referred to as "chrome plating"). The Proposed Amendments further reduce hexavalent chromium emissions to reduce health risks in communities located near chrome plating facilities. The Proposed Amendments aim to reduce the cumulative risk burden that many overburdened and disadvantaged communities located near chrome plating facilities experience. Reducing the health risks caused by emissions of hexavalent chromium, a highly toxic compound, from chrome plating facilities will help address the risk burden experienced by these communities.

Chrome plating processes can be grouped into two categories. The first category, decorative chrome plating, provides a bright, shiny, metallic finish on objects such as wheel rims, car bumpers, and plumbing fixtures. The second category, functional chrome plating, encompasses two types of coating processes: hard chrome plating and chromic acid anodizing. Functional chrome plating produces a thicker layer of chromium than decorative chrome plating. Hard chrome plating provides a smooth, wear-resistant surface designed to operate under extreme conditions (e.g., industrial parts, aircraft landing gears). Chromic acid anodizing generates an oxide layer on the surface of the part, imparting it with physical properties such as corrosion resistance and electrical insulation to meet military or company specifications. All of these chrome plating processes generate mists containing hexavalent chromium that are released into the surrounding air.

There are 113 chrome plating facilities currently operating with hexavalent chromium in California, and over 70 percent of them are in overburdened and disadvantaged communities. Of the 113 total chrome plating facilities, there are 51 decorative chrome plating facilities and 62 functional chrome plating facilities. Of the 62 functional facilities, 36 are hard chrome plating facilities and 26 are chromic acid anodizing facilities.

In 1986, CARB's Board identified hexavalent chromium as a toxic air contaminant (TAC) under California law pursuant to Assembly Bill (AB) 1807 (Tanner, Stats. 1983, ch. 1047) and Health and Safety Code section 39657.[2,3] Specifically, the Board identified hexavalent chromium because of its toxicity and potential for exposures to this highly toxic compound. It was identified as a compound that has the potential to cause cancer with no associated

---

[1] *Chrome Plating ATCM*

[2] *CARB Identified Toxic Air Contaminants*

[3] *AB 1807 – Toxics Air Contaminant Identification and Control*

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) (see Section V.(A)(1) for more information).[4] Table ES.1 compares the cancer potencies of common carcinogens to hexavalent chromium. For instance, the potential risk from exposures to all compounds except dioxins is much less as compared to the potential risk posed by hexavalent chromium. U.S. Environmental Protection Agency (U.S. EPA) Integrated Risk Information System (IRIS) inhalation unit risk factor is 5.0E-03 per $\mu g/m^3$ for lifetime exposure and 3.0E-03 for adult exposure to ethylene oxide.[5]

Table ES.1 Cancer Potencies of Common Carcinogens Relative to Hexavalent Chromium

Compound	OEHHA Unit Risk Factors $(\mu g/m^3)^{-1}$	Relative Potency to Hexavalent Chromium
Dioxin	3.8E+01	253
Hexavalent Chromium	**1.5E-01**	**1**
Cadmium	4.2E-03	0.028
Arsenic (inorganic)	3.3E-03	0.022
Diesel Exhaust	3.0E-04	0.002
Nickel	2.6E-04	0.0017
Ethylene Oxide	8.8E-05	0.00059
Benzene	2.9E-05	0.00019
Ethylene Dichloride	2.1E-05	0.00014
Lead	1.2E-05	0.00008

Following the Board's identification of hexavalent chromium as a TAC, CARB has taken action to reduce exposures to this hazardous chemical. In 1988, the Chrome Plating ATCM was adopted to reduce hexavalent chromium emissions from chrome plating facilities. The Chrome Plating ATCM reduced overall emissions by requiring the installation of add-on pollution control devices, such as High Efficiency Particulate Air (HEPA) filters or packed bed scrubbers, and/or by requiring the addition of fume suppressants to the plating tanks.

In 1998, the Board adopted amendments to the Chrome Plating ATCM to establish equivalency with the federal regulation for chrome plating, the 1995 Chrome Plating National Emission Standards for Hazardous Air Pollutant (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, CARB adopted additional amendments to the Chrome Plating ATCM (the 2007 ATCM), resulting in the current statewide emission standards, which

[4] *Consolidated Table of OEHHA/CARB approved health values*
[5] *U.S. EPA Integrated Risk Information System (IRIS)*

were the most stringent and health protective emission standards applicable to chrome plating operations in the nation at that time.

In July 2017, AB 617 (C. Garcia, Stats. of 2017, Ch.136) was signed into California law to address local air pollution in environmental justice (EJ) communities. As mandated under AB 617, California's air quality management and air pollution control districts (Districts) must develop and adopt a community emissions reduction plan (CERP) for each selected community, in consultation with CARB, community members, and other stakeholders in the affected community.[6] AB 617 CERPs identified chrome plating operations as a concern for many 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.

CARB's evaluation of the effectiveness of the 2007 ATCM demonstrates the need for further amendments. Many communities continue to be impacted by emissions of hexavalent chromium from multiple chrome plating facilities in addition to other sources of hexavalent chromium and other toxic air contaminants. These cumulative impacts have been a long-standing concern of communities. The Proposed Amendments will further reduce hexavalent chromium emissions from chrome plating operations in California by switching to less toxic alternatives and implementing improved technologies and operating practices.

Past ambient air monitoring demonstrated elevated levels of hexavalent chromium near chrome plating facilities. Evaluation of facility locations has shown that sensitive receptors such as schools and residential neighborhoods are often located in close proximity to chrome plating facilities. Approximately nine percent of all chrome plating facilities are located within approximately 300 meters of a school. The data also show that the chrome plating facilities are often located in low income communities and communities of color.

Based on staff's analysis, approximately 73 percent of California's chrome plating facilities are located within Senate Bill (SB) 535 (De Leon, K., Stats. 2012, ch. 830) communities. SB 535 requires the California Environmental Protection Agency (CalEPA) 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 identifies disadvantaged communities as those that receive scores of 75 percent to 100 percent. CalEnviroScreen is a mapping tool that helps identify California communities that are most affected by many sources of pollution and where people are often vulnerable to the effects of air pollution. Areas designated with high scores indicate that people within these areas experience much higher exposures to pollutants and to adverse environmental conditions caused by pollution than areas with low scores. Additionally, approximately 14 percent of chrome plating facilities are located within communities selected by the Board under AB 617. These selected communities have high cumulative exposure burdens from toxic air contaminants and criteria air pollutants.

---

[6] *AB 617 (C. Garcia, Stats. of 2017, Ch.136) – Nonvehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminant*

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.[7,8] Additional communities will be considered annually, and efforts are being made in the upcoming Blueprint revision (expected in 2023) to bring benefits to more disadvantaged communities impacted by toxic air contaminants and criteria pollutants that have not been selected.

Table ES.2 below shows the number of chrome plating facilities located in disadvantaged communities in California by chrome plating type. CalEPA currently defines a disadvantaged community from an environmental hazard and socioeconomic standpoint as a community that scores within the top 25 percent of the census tracts, as analyzed by CalEnviroScreen.

Table ES.2 Chrome Plating Facilities in California Located in Disadvantaged Communities

Facility Type	Number of Facilities in California	Number of Facilities in Disadvantaged Communities (SB 535 and AB 617)
Decorative Plating	51	38
Hard Plating	36	26
Chromic Acid Anodizing	26	19

Table ES.3 shows the number of chrome plating facilities located in disadvantaged communities, organized by the District in which they are located, including South Coast Air Quality Management District (South Coast AQMD), Bay Area Air Quality Management District (Bay Area AQMD), San Joaquin Valley Air Pollution Control District (San Joaquin Valley APCD), Sacramento Metro Air Quality Management District (Sacramento Metro AQMD), and Ventura County Air Pollution Control District (Ventura County APCD).

[7] *CalEnviroScreen/ OEHHA*

[8] *Senate Bill (SB) 535 California Global Warming Solutions Act of 2006 Greenhous Gas Reduction Fund*

Table ES.3 Chrome Plating Facilities Located in Disadvantaged Communities by District

District	Decorative Facilities (#)	Decorative Facilities in Disadvantaged Communities (#)	Hard Plating Facilities (#)	Hard Plating Facilities in Disadvantaged Communities (#)	Chromic Acid Anodizing Facilities (#)	Chromic Acid Anodizing Facilities in Disadvantaged Communities (#)
South Coast AQMD	36	31	25	17	25	18
Bay Area AQMD	4	2	6	5	0	0
San Joaquin Valley APCD	6	4	3	3	0	0
Sacramento Metro AQMD	1	1	1	1	0	0
Ventura County APCD	0	0	0	0	1	1

B. Summary of Proposal

The Proposed Amendments will result in the most stringent regulation of hexavalent chromium emissions from the chrome plating industry (compared to federal standards and District rules), with the goal of eliminating toxic hexavalent chromium emissions from the chrome plating industry in California over time. Due to the high toxicity level of hexavalent chromium, the health impacts of exposure to hexavalent chromium, the proximity of chrome plating facilities to sensitive receptors and disadvantaged communities, and following extensive evaluation of air monitoring data, a zero emission level is necessary to prevent an endangerment of public health. Hexavalent chromium is an extremely potent human carcinogen with no known safe level of exposure. As discussed below, long-term exposure to even very low hexavalent chromium concentrations can substantially increase a person's chance of developing cancer. Short-term exposure can lead to chronic and acute symptoms such as asthma or other respiratory distress given its high potency. As such, the Proposed Amendments phase out the use of hexavalent chromium to prevent communities from being exposed to hexavalent chromium from chrome plating operations.

The key requirements of the Proposed Amendments include the following.

All Chrome Platers:

- 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 only 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 modified or additional hexavalent chromium tanks meet all applicable requirements.
- Owners or operators of chrome plating facilities that use hexavalent chromium must reduce fugitive emissions by implementing the applicable housekeeping requirements and best management practices by January 1, 2024, and July 1, 2024, respectively.

Decorative Platers:

- By January 1, 2027, owners or operators of decorative plating facilities shall not use hexavalent chromium for the purpose of decorative chrome plating unless they are granted an extension.

Functional Platers:

- By July 1, 2024, owners or operators of functional chrome plating facilities must meet the following requirements:
    - Control hexavalent chromium emissions from Tier II tank(s) by utilizing a tank cover, mechanical fume suppressant, or other method approved by the District (see section I.(F). for definition of Tiers of tanks). Alternatively, they can comply with the applicable emission limit using an add-on air pollution control device.
    - Cover the entire surface area of Tier III tank(s) until the add-on air pollution control device meeting the applicable emission limitation has been installed as required by the Proposed Amendments.
- By January 1, 2026, 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(amp-hour) for each Tier III hexavalent chromium plating tank.
- By January 1, 2039, owners or operators shall not use hexavalent chromium for the purpose of functional chrome plating.

Additionally, CARB staff will conduct two technology reviews and report on the progress of the development of alternatives to using hexavalent chromium for functional chrome plating. The first technology review must be completed by January 1, 2032, and the second must be completed by January 1, 2036. Based on these reviews, CARB staff may recommend amendments to the phase out dates.

CARB staff have evaluated all feasible substitutes to hexavalent chromium plating (e.g., conversion to trivalent chromium plating) and emission reduction and monitoring strategies (e.g., increased source testing, recordkeeping, and fugitive emission control strategies) to eliminate emissions of hexavalent chromium from the chrome plating industry.

Trivalent chromium is a significantly less toxic alternative to hexavalent chromium. It is available to replace hexavalent chromium in decorative chrome plating and may serve as a replacement for functional chrome plating applications over time. Staff found that trivalent chromium technology is functionally feasible for decorative chrome plating operations but is not currently available for all functional chrome plating operations. Although it is functionally feasible to transition to trivalent chromium technologies for decorative chrome plating, industry has expressed concerns that trivalent chromium does not produce the same aesthetic as hexavalent chromium. Industry claims color is a driving factor for certain applications in the decorative chrome plating sector. Accordingly, they have expressed concern that customers may take their business out-of-state to achieve the color they desire following the phase out due to the availability of hexavalent chromium decorative plating outside of California. This anticipated loss of customers and the costs of transitioning to trivalent chromium could cause some decorative chrome platers to cease operations or move out-of-state rather than make the investments needed to comply. At this time, for functional chrome plating operations, there are limited applications where trivalent chromium can be used, therefore additional development time is needed.

C. Impacts and Benefits of the Proposal

1. Health Impacts and Benefits

There are numerous expected benefits from the Proposed Amendments, including eliminating hexavalent chromium emissions from California's chrome plating industry, reducing the potential cancer risk to individual residents and off-site workers near chrome plating facilities, and reducing occupational exposures for on-site workers.

The total hexavalent chromium emission reductions due to the Proposed Amendments is estimated to be about 120 pounds (lbs) from 2024 to 2043. By eliminating hexavalent chromium emissions, the potential cancer risk from chrome plating operations will be reduced to zero by the year 2039, when the chrome plating facilities must cease using hexavalent chromium for their chrome plating operations. Reductions in potential cancer risk are also expected from the reduced exposure to hexavalent chromium. The potential individual resident cancer risk is reduced by 50 percent for functional platers in 2026 and 100 percent for decorative platers in 2027. In 2039, individual resident cancer risk is reduced by 100 percent for all plating types when compared to the 2019 Baseline. The 2007 ATCM has a maximum individual cancer risk (MICR) of between 61 chances per million to over 100 chances per million for each chrome plating facility based on 2005 baseline emissions. Recent

CARB regulatory actions targeting diesel PM2.5 have achieved 52 percent to 72 percent reductions in cancer risk.[9,10]

CARB's mobile source control programs have made significant strides in reducing emissions from diesel particulate matter (PM) by transitioning to zero emission technologies and by revising and amending the mobile source diesel PM control measures. The approach CARB has taken to control diesel PM is to transition to electric power instead of cleaner diesel technology, where possible, to achieve zero emissions. As discussed above, hexavalent chromium is second only to dioxin in cancer potency of identified TACs and is about 500 times more potent than diesel PM (compared to hexavalent chromium, a concentration of 1 ng/m3 of diesel PM would be less than one chance per million). CARB is committed to striving for zero emissions for toxics, as technology permits, in order to protect the public health.

2. Environmental Impacts and Benefits

Another benefit from phasing out the use of hexavalent chromium in chrome plating is protecting water quality. Hexavalent chromium can enter the water system through runoff or discharges of chrome plating dusts, wastes, or spills, which can contaminate surface water and groundwater.

An additional co-benefit of the proposed phase out is the elimination of perfluoroalkyl and polyfluoroalkyl substances (PFAS) contained in the fume suppressants used in chrome plating operations, which is a toxic and highly persistent environmental contaminant. Scientific studies found that exposure to some PFAS in the environment may be linked to harmful health effects in humans and animals.[11] These toxic substances are found in water, air, fish, or soil at locations across the nation and the globe. PFAS have been used by chrome plating facilities as mist suppressants added to the hexavalent chromium plating bath to prevent toxic metal fumes, including hexavalent chromium, from being emitted into the air. However, PFAS are not used in the trivalent chromium plating process. Other regulatory agencies are taking actions to address PFAS contaminations; more information can be found in Section III.

3. Potential Economic Impacts

The businesses directly impacted by the Proposed Amendments are decorative chrome plating facilities, hard chrome plating facilities, and chromic acid anodizing facilities. The total unamortized costs to these facilities, inclusive of additional sales tax over 20 years, are estimated to be approximately $44 million for the decorative platers, $525 million for the hard platers, and $123 million for the chromic acid anodizing facilities, totaling $692 million. The amortized costs to these facilities for the same period totals $591 million. There are no direct costs on individuals due to the Proposed Amendments. However, there may be indirect costs as a result of potential passed through costs from chrome plating facilities. To

---

[9] *Transport Refrigeration Units (TRU) ATCM-ISOR*

[10] *Ocean-Going Vessels At Berth ATCM-ISOR*

[11] *National Institute of Environmental Health Sciences-PFAS*

the extent that trivalent chromium will be a suitable alternative to hexavalent chromium in the various applications of chrome plating, the cost of plated parts would be higher, and the facilities may want to charge more for their services. If customers do not accept trivalent chromium plated parts, this could result in a further competitive disadvantage and potential closures of chrome plating businesses in California because chrome platers in other states can continue to use hexavalent chromium. Cost impact analysis of the Proposed Amendments, as detailed in the SRIA and the updated summary in Section IX, shows overall negative employment impacts to the manufacturing industry, including chrome plating facilities, over the analysis period.[12]

I. Introduction and Background

A. What is Chrome Plating?

There are two types of chrome plating, chromium electroplating and chromic acid anodizing. Chromium electroplating is the electrical application of a coating of chromium onto a surface for decoration, corrosion protection, and for durability. An electrical charge is applied to a tank (bath) containing an electrolytic salt (chromium anhydride) solution. The electrical charge causes the chromium metal particles in the bath to fall out of solution and deposit onto objects placed in the plating solution. Chromic acid anodizing is an electrochemical process that creates an oxide film by controlling the oxidation and is typically applied to aluminum surfaces.

Chrome plating can be grouped into two categories. The first category of chrome plating is called decorative chrome plating, which provides a bright, shiny, metallic finish on objects such as wheel rims, car bumpers, and plumbing fixtures. The second category of chrome plating is called functional chrome plating. Functional chrome plating encompasses two types of coating processes: hard chrome plating and chromic acid anodizing. Hard chrome plating produces a thicker layer of chromium, which provides a smooth, wear-resistant surface designed to operate under extreme conditions (e.g., industrial parts, aircraft landing gears). Chromic acid anodizing generates an oxide layer on the surface of the part, imparting it with physical properties such as corrosion resistance and electrical insulation to meet military or company specifications. All of these chrome plating processes generate mists containing hexavalent chromium that are released into the surrounding air.

1. Decorative Chrome Plating

Decorative chrome plating is an electroplating technique where a thin layer of chromium is deposited onto a base material (e.g., brass, steel, aluminum, or plastic), designed to be aesthetically pleasing and durable. The thin layer of chromium is usually deposited over a layer of nickel previously placed on the base material for aesthetics and basic wear protection. A decorative chrome plating tank is shown in Figure I.1, and example

[12] *Chrome ATCM SRIA*

applications, including car parts, musical instruments, tools, and fixtures, are shown in Figure I.2 below.

Figure I.1 Decorative Chrome Plating Tank

Figure I.2 Decorative Chrome Plating Applications

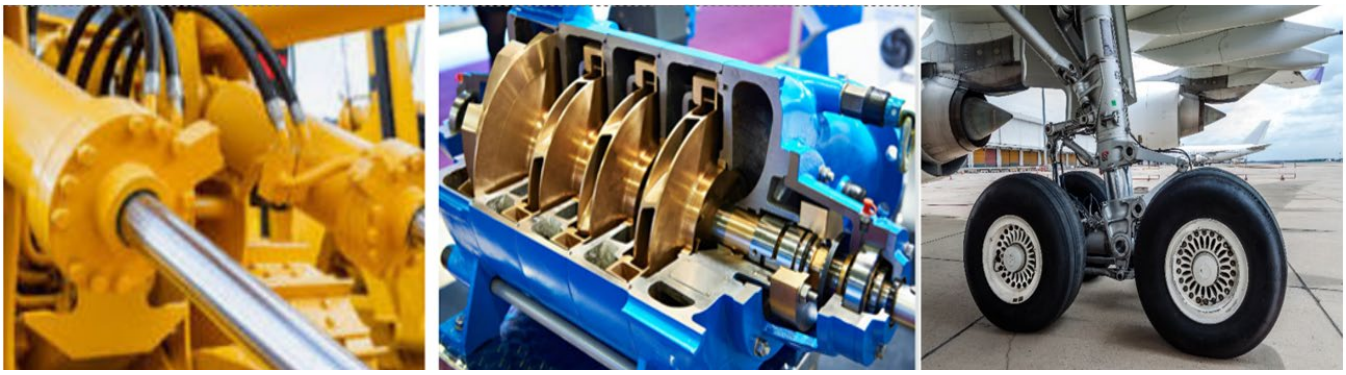
2. Functional Plating: Hard Chrome Plating

Hard chrome plating, one of the two types of functional plating, is an electroplating technique that imparts a thicker layer of chromium than decorative chrome finishes. It is used in many industrial applications for its strength, wear resistance, corrosion resistance, and sometimes for other properties such as thermal and electrical conductivity. These properties are needed by many hard chrome plating customers, such as the military and the aerospace industry. Particularly for military and aerospace applications, the parts need to meet the customer's specific standards due to the stresses under which they must function and the high consequence of failure for specific parts (e.g., aircraft landing gear, crankshafts, and rocket components).

Tanks used in hard chrome plating operations contain chromic acid, sulfuric acid, and water. Hard chrome plating requires constant control of the plating bath temperature, electrical power, plating time, and bath composition. Hard chrome plating tanks are shown in Figure I.3, and example applications, including hydraulic cylinders, rotors, bearings, and agricultural equipment, are shown in Figure I.4 below.

Figure I.3 Hard Chrome Plating Tank

Figure I.4 Hard Chrome Plating Applications

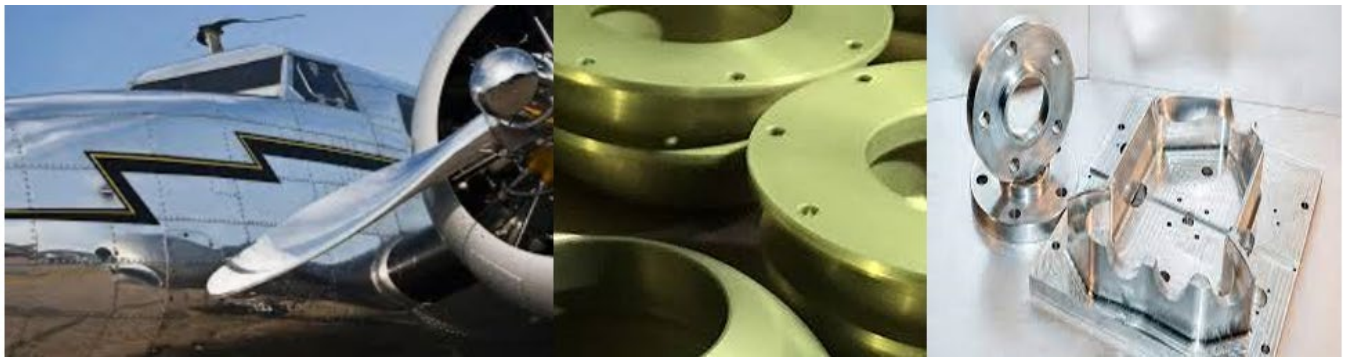


3. Functional Plating: Chromic Acid Anodizing

Chromic acid anodizing, the other type of functional chrome plating, is an electrolytic process by which an oxide layer is produced on the surface of a base material for functional purposes. It is used to provide an oxide layer on aluminum that imparts the following properties: corrosion protection, electrical insulation, and increased bonding for subsequent materials. Chromic acid anodizing is used primarily on aircraft parts and architectural structures that are subject to high stress and corrosion, such as landing gear, and hydraulic and industrial parts. A chromic acid anodizing tank is shown in Figure I.5, and example applications, including aerospace components and precision machined parts, are shown in Figure I.6 below.

Figure I.5 Chromic Acid Anodizing Plating Tank

Figure I.6 Chromic Acid Anodizing Plating Applications



B. What is Hexavalent Chromium?

Hexavalent chromium (Cr (VI)) is a form of the metallic element chromium and does not occur naturally. Hexavalent chromium is the positive ion of a metal salt, and its ions are produced under strong oxidizing conditions from metallic chromium, with the most common ions being chromate ions (CrO^{-2}) or dichromate ions (Cr_2O^{-2}). Unlike many pollutants, which are gases, hexavalent chromium is a particle that is an air pollution concern when it becomes airborne, such as when hexavalent chromium containing mists are released from a tank or when hexavalent chromium laden dust is released into the ambient air.

C. How is Hexavalent Chromium Emitted from the Chrome Plating Processes?

In the chrome plating process, only about 20 percent of the electrical current applied to the plating tank actually deposits chromium onto the part. The remaining current forms bubbles (hydrogen gas at the cathode and oxygen at the anode) that rise to the surface of the bath. As these bubbles burst, mists containing hexavalent chromium are released from the plating tank and emitted into the air. Hexavalent chromium can also be released from drips when the pieces are lifted from the tanks and transferred. The hexavalent chromium released in mists, drips, and spills can settle onto the equipment, surfaces, and floors, where they dry and form dust that can eventually be released into outdoor air through building openings and vents.

D. Why are We Concerned About Emissions of Hexavalent Chromium?

Hexavalent chromium is a known human carcinogen, and prolonged exposure may cause lung cancer. In 1986, the Board identified hexavalent chromium as a TAC that has no safe exposure levels. Included in this determination, the Office of Environmental Health Hazard Assessment (OEHHA) developed a cancer unit risk factor of 0.15 $(\mu g/m^3)^{-1}$ for hexavalent chromium, which was approved by the Scientific Review Panel on TACs. This value means that the probability of an individual developing cancer due to exposure to 1 ng/m^3 of hexavalent chromium over a 30-year exposure duration would be 360 chances per million people.[13] Hexavalent chromium is second only to dioxin in cancer potency of identified TACs and is about 500 times more potent than diesel PM (compared to hexavalent chromium, a concentration of 1 ng/m^3 of diesel PM would be less than one chance per million). In addition, depending on whether you use OEHHA or U.S. EPA Integrated Risk Information System (IRIS) risk values, it is approximately 1,700 or 30 times more potent than ethylene oxide respectively, see Section V.(A)(1) for additional information.[14]

E. What Does State Law Require CARB to Do to Reduce the Public's Exposure to Toxic Air Contaminants?

Health and Safety Code section 39666 requires CARB to adopt control measures to reduce emissions of TACs to protect public health. When adopting or amending ATCMs, if no safe threshold exposure level is identified for the TAC, the ATCM is to reduce emissions to the lowest level achievable level through the application of best available control technology (BACT) or a more effective control method unless CARB determines, based on an assessment of risk, that an alternative level of emission reduction is adequate or necessary to prevent an endangerment of public health.

For this ATCM, CARB staff have evaluated all feasible substitutes (e.g., conversion to trivalent chromium plating) and emission reduction and monitoring strategies (e.g., use of fume suppressants, increased testing and recordkeeping, and fugitive emission control strategies) to reduce emissions of hexavalent chromium from chrome plating facilities in California. Since there is no safe threshold exposure level identified for hexavalent chromium, due to the location of many of these facilities within communities and near sensitive receptors, and since less toxic alternative technology is available or is under development, CARB staff is proposing to eliminate usage of hexavalent chromium by the chrome plating industry in order to protect public health.

---

[13] *2015 OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines*

[14] *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values (EtO)*

F. What Amendments to the Chrome Plating ATCM Are Being Proposed by Staff?

The Proposed Amendments eliminate emissions of hexavalent chromium from chrome plating facilities on the corresponding phase out dates and encourage the development of alternative technologies to replace hexavalent chromium. The Proposed Amendments will reduce exposures to hexavalent chromium within communities that could be impacted by cumulative exposures from multiple chrome plating operations as well as sources of other air pollutants. 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 only 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 modified or additional 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 covered by the 2007 ATCM become subject to the Proposed Amendments (the 2007 ATCM only covered chrome plating tanks).
- 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 the District (see Proposed Amendments for definitions of the Tiers of tanks). 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 the 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 best management practices to reduce fugitive emissions.

By January 1, 2026:

- 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 (amp-hour) for each Tier III hexavalent chromium tank.

    - 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 plating facilities shall not use hexavalent chromium for the purpose of decorative chrome plating unless they are granted an extension.

By January 1, 2032

- CARB staff must complete the first technology review on alternatives to hexavalent chromium in functional chrome 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 shall not 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.

G. What Are the Benefits of the Proposed Amendments?

CARB staff estimated the emission reductions of hexavalent chromium over twenty years for the Proposed Amendments. The emission reduction benefits were evaluated from 2024 to 2043 to account for a period of twenty years after the effective date of the Proposed Amendments, including five years after full implementation. Table I.1 shows the total emission reductions from the Proposed Amendments during the evaluation period. For decorative plating operations, CARB staff estimated hexavalent chromium emission reductions of 1.3 pounds (lbs)/year and a total reduction of 22.3 lbs. For hard chrome plating operations, CARB staff estimated a total emission reduction of 96.4 lbs. Of this total, approximately 4.1 lbs/year and a total of 53.2 lbs of emission reductions take place before the functional chrome plating phase out, and approximately 8.6 lbs/year and a total of 43.2 lbs of emission reductions will result after the phase out. For chromic acid anodizing operations, staff estimated a total emission reduction of 2.3 lbs for the analysis period. Of this total, approximately 0.1 lbs/year and a total of 1.3 lbs of emission reductions take place before the functional chrome plating phase out, and approximately 0.2 lbs/year and a total of 1.0 lb of emission reductions will result after the phase out.

In addition, as a co-benefit, the usage and emissions of 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 alternative technologies that do not use

PFAS-containing fume suppressants. As discussed above, the 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.

Table I.1 Estimated Annual Hexavalent Chromium Emissions Reductions (2024-2043)

Year[1]	Hexavalent Chromium from Decorative Chrome Plating Operations (lbs)	Hexavalent Chromium from Hard Chrome Plating Operations (lbs)	Hexavalent Chromium from Chromic Acid Anodizing Operations (lbs)
2024 thru 2025	0.0	0.0	0.0
2026 thru 2038	15.7	53.2	1.3
2039 thru 2043	6.6	43.2	1.0
Total (lbs)	**22.3**	**96.4**	**2.3**

[1] This table has been corrected since posting of SRIA to reflect more accurate emission reduction estimates in years 2025 and 2038.

While there is no current methodology for quantifying a monetized benefit in the reduction of cancer risk, the exposure reductions are expected to reduce the potential cancer risk from chrome plating operations to zero by the year 2039.

H. What Other Regulatory Actions Affect the Chrome Plating Industry?

On April 2, 2021, South Coast AQMD amended Rule 1469, which applies to chrome plating facilities (decorative and hard chrome plating and chromic acid anodizing). The purpose of this rule is to further reduce hexavalent chromium emissions from chrome plating facilities. The most current amended Rule 1469 (April 2, 2021) included additional measures to reduce fugitive emissions, making it more stringent than CARB's 2007 ATCM.[15]

Major elements of Rule 1469 are as follows:

- Building enclosures.
- Enhance housekeeping requirements and best management practices.
- Periodic source testing and parameter monitoring of air pollution controls.
- Conditional requirements for permanent total enclosures vented to negative air, and
- Consistency with the federal chrome plating regulation relating to prohibition of perfluorooctane sulfonic acid (PFOS) containing fume suppressants and surface tension requirements.

U.S. EPA has developed specific regulations referred to as the National Emission Standards for Hazardous Air Pollutants (NESHAPs) to address health risks associated with Hazardous Air Pollutants (HAPs).[16] PFOS (CAS No.1763-23-1) is a compound that has been banned by

[15] *South Coast AQMD Rule 1469*
[16] *Chrome Plating NESHAP, September 19,2012_Phase-out PFOS*

U.S. EPA and was used in fume suppressants in California prior to 2016. The compound is considered highly toxic and persistent in the environment.

In January 1995, U.S. EPA promulgated the Chrome Plating NESHAP.[17] This regulation established concentration standards for hard chrome plating facilities that could be met by the addition of forced ventilation systems, but add-on air pollution control devices were not required. In addition, surface tension standards were established for decorative chrome plating facilities and chromic acid anodizing facilities. Surface tension standards help reduce hexavalent chromium emitted in bubbles rising out of the tanks.

On July 19, 2004, U.S. EPA amended the Chrome Plating NESHAP to: allow the use of chemical fume suppressants to control chromium emissions; provide an alternative standard for hard chrome plating tanks equipped with enclosed hoods; modify surface tension parameter testing; expand the definition of "chromium electroplating and anodizing" to include the ancillary hardware associated with the plating process; require 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 Chrome Plating NESHAP to: include the revisions to the emissions 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 fume suppressants that use PFOS by 2016. CARB subsequently required manufacturers to develop fume suppressant alternatives and have certified non-PFOS-containing fume suppressants for use in California.

Additional rules and regulations that apply to the metal finishing industry include South Coast AQMD Rule 1469.1, which applies to facilities that conduct spray coating operations using coatings that contain hexavalent chromium, referred to as "chromate coatings."[18] Spraying of chromate coatings is also currently regulated under the NESHAP for Aerospace Manufacturing and Rework Facilities (Aerospace NESHAP 40 Code of Federal Regulations Subpart GG), adopted in September 1995. The federal regulation established filtration efficiency requirements for dry particulate filters for new and existing sources.

There are other District rules and federal regulations that may apply to chrome plating operations based on other applications within the facilities. A few examples include:

- South Coast Air Quality Management District Rule 1426 – Emissions from Metal Finishing Operations, which address fugitive emissions of hexavalent chromium, nickel, cadmium, and lead from other metal finishing tanks and various Aerospace Coating Rules.
- San Diego Air Pollution Control District Rule 67.9, which addresses VOC content in surface coating operations.

---

[17] *Chrome Plating NESHAP; 40 Code of Federal Regulations (CFR) Part 63, Subpart N.*
[18] *South Coast AQMD Rule 1469.1*

- San Joaquin Valley Air Pollution Control District Rule 4605, which addresses VOC content in surface coating operations.
- Bay Area Air Quality Management District Rule 11-18, which addresses the air toxic emissions from existing facilities, and Rule 2-5, which addresses the new and modified sources of toxic air contaminant (TAC) emissions.
- Federal NESHAP for Plating and Polishing Operations covering electroplating operations (not including chrome plating), electroless or non-electrolytic plating, non-electrolytic coating, and polishing operations (40 Code of Federal Regulations Subpart WWWWWW).

I. Need for Proposed Amendments to Chrome Plating ATCM

Due to the carcinogenicity of hexavalent chromium, and in response to community concerns, CARB staff undertook a reevaluation of the Chrome Plating ATCM. CARB found that chrome plating facilities operate in communities exposed to multiple sources of toxic air contaminants (TACs), contributing to cumulative impacts, which is particularly harmful to sensitive receptors. This reevaluation highlighted the need to amend the Chrome Plating ATCM.

After the adoption of AB 617, CARB hosted community meetings across the state to better understand public concerns. Chrome plating facilities were frequently identified as a source of concern by those living in overburdened communities. Since that time, there have been several communities, including South Fresno and South Los Angeles, that have identified measures to address chrome plating facilities in their Board-adopted Community Emissions Reduction Programs.

Some chrome plating facilities are located within selected communities designated by AB 617 and selected by CARB. Also, 73 percent of the chrome plating facilities in California are located within communities designated as SB 535 disadvantaged communities because they have a CalEnviroScreen 4.0 score between 75 percent and 100 percent. The Proposed Amendments would help communities address some of their air pollution concerns and lower cumulative impacts by reducing and ultimately eliminating hexavalent chromium emissions from chrome plating operations in California.

California's chrome plating industry includes small businesses and large businesses that plate for the mining, agriculture, manufacturing, aerospace, and defense industries. Because these facilities use hexavalent chromium, they produce emissions of hexavalent chromium regardless of how well they are complying with existing rules and regulations. Although some of these operations have add-on pollution control systems, emissions can still be released into surrounding communities because the emission control systems do not have 100 percent capture efficiency.

Emissions not captured by the control system are called fugitive emissions and include emissions coming off uncontrolled tanks. These electrolytic processes cause mists containing hexavalent chromium to be ejected from the plating tanks, which can eventually be emitted into outdoor air through building openings and vents. Other examples of fugitive emissions

include dust containing hexavalent chromium emitted from compressed air operations, buffing and grinding operations, and cleaning. These and other types of fugitive emissions can contribute to ambient concentrations of hexavalent chromium near the source. Since many of the facilities are located in disadvantaged communities and in close proximity to sensitive receptors, it is necessary to reduce emissions of and exposures to this hazardous chemical in order to protect the health of Californians.

Because less toxic alternatives are now available, CARB staff are proposing to amend the 2007 ATCM to eventually eliminate emissions from chrome plating operations as required by statute. The measures in this proposal will benefit communities across the State as exposure to hexavalent chromium from chrome plating is reduced and ultimately eliminated.

J. Regulatory Authority

Over thirty years ago, California took action to identify hexavalent chromium as a TAC that has the potential to cause cancer with no associated threshold for cancer initiation under AB 1807 (Tanner, Stats. 1983, ch. 1047) and Health and Safety Code section 39655.[19] This means there is no level of emissions below which exposure to hexavalent chromium would be considered safe. Health and Safety Code section 39666 requires CARB to adopt control measures to reduce emissions of TACs. When adopting or amending ATCMs for TACs, if no safe threshold exposure level is identified, the ATCM is required to reduce emissions to the lowest level achievable through the application of BACT or a more effective control method, unless CARB determines, based on an assessment of risk, that an alternative level of emission reduction is adequate or necessary to prevent an endangerment of public health. The ATCM must be designed in consideration of the factors listed in Health and Safety Code section 39665(b), including the characteristics of the pollutant and emissions, health risks, environmental impacts, and costs.

The Air Toxics "Hot Spots" Information and Assessment Act program (AB 2588, Connelly, Stats. of 1987, ch.1252) (Health & Saf. Code §§ 44300–44394) requires that stationary sources of emissions report the types and quantities of certain substances that their facilities routinely release into the air.[20,21] The goals of the "Hot Spots" Act are to collect emission data, identify facilities having localized impacts, determine health risks, and notify nearby residents of significant risks. In September 1992, the "Hot Spots" Act was amended by SB 1731 (Stats. 1992, ch. 1162) to require the reduction of significant risks.[22] The bill requires that owners of significant-risk facilities reduce their risks below the level of significance as determined by the Districts. Chrome plating operations are subject to the "Hot Spots" program, and, as described below, are also subject to a technology based ATCM to reduce emissions of hexavalent chromium.

---

[19] *Health & Safety Code § 39655*
[20] AB 2588 Program *"Hot Spots"*
[21] *Health and Safety Code, section 44300-44394*
[22] *SB 1731 Risk Reduction Audits Plan*

AB 617 (Health & Saf. Code § 44391.2, subd. (b)) requires the development and implementation of additional emissions reporting, monitoring, and reduction plans and measures to reduce air pollution and improve public health in communities that experience disproportionate burdens from exposure to air pollutants.[23] Many of these disadvantaged communities experience pollution impacts from large industrial facilities, such as oil refineries, or from smaller sources such as chrome platers, metal recycling facilities, oil and gas operations, or other sources. CARB's Community Air Protection Blueprint (Blueprint), which outlines actions to be taken in support of AB 617, identified the Chrome Plating ATCM as an area of need.[24] The Blueprint states that CARB would amend the Chrome Plating ATCM in order to reduce emissions in communities impacted by stationary sources. The Blueprint committed CARB to developing amendments to the Chrome Plating ATCM.

As such, CARB reevaluated the 2007 ATCM. Staff listened to community concerns and considered the high potency of hexavalent chromium, which has a higher cancer potency than diesel exhaust PM. Based on this effort, staff determined that more needed to be done to reduce hexavalent chromium emissions from chrome plating facilities to further protect public health of Californians, including residents of disadvantaged or low income communities and communities of color.

K. Background on Chrome Plating ATCM

In 1988, the Chrome Plating ATCM was adopted to reduce hexavalent chromium emissions from chrome plating facilities (including decorative and functional chrome plating and chromic acid anodizing facilities). The Chrome Plating ATCM reduced overall emissions from these facilities by requiring chrome plating tanks to be equipped with fume suppressants or add-on pollution control devices, such as high-efficiency particulate air (HEPA) filters and packed bed scrubbers.

CARB amended the Chrome Plating ATCM in 1998 to establish equivalency with the federal regulation for chrome plating, the 1995 Chrome Plating 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, CARB adopted additional amendments to the Chrome Plating ATCM, resulting in the current statewide emission standards.

L. The 2007 ATCM

The 2007 ATCM is the currently effective Chrome Plating ATCM. It applies to all chrome plating facilities in California, which includes any facility performing decorative chrome plating, hard chrome plating, or chromic acid anodizing. It contains special provisions that apply only to facilities that perform trivalent chromium plating or facilities with enclosed hexavalent chromium plating tanks. Also, the 2007 ATCM applies to any person who sells, supplies, offers for sale, uses, or manufacturers for sale in California chrome plating kit(s).

---

[23] *Health and Safety Code, section 44390*

[24] *CARB Final Community Air Protection Blueprint – October 19, 2018*

The 2007 ATCM requirements that apply to existing, modified, and new hexavalent chromium plating facilities include:

- An emission rate of 0.0015 milligrams per amp-hour or less, as measured after the add-on air pollution control device is installed, unless the facility is operating under an approved alternative method as provided in California Code of Regulations, title 17, section 93102.4(b)(3) and Health and Safety Code section 39666(f).
- Environmental compliance and recordkeeping conducted by persons who completed a CARB Compliance Assistance Training Course and renewed the training every two years.
- Housekeeping practices that reduce fugitive emissions of hexavalent chromium.

Additionally, during operation of tank(s), each owner or operator of an existing hexavalent chromium plating facility must control hexavalent chromium emissions discharged to the atmosphere by meeting the requirements identified in Table I.2 below.

Table I.2 Requirements for Existing Hexavalent Chrome Plating Facilities

Sensitive Receptor Distance[1]	Annual Permitted Ampere-Hours	Emission Limitation
≤ 330 feet	≤ 20,000	0.01 milligrams/amp-hour with use of chemical fume suppressants as specified in section 93102.8[2]
≤ 330 feet	> 20,000 and ≤ 200,000	0.0015 milligrams/amp-hour as measured after add-on air pollution control device(s)
≤ 330 feet	> 200,000	0.0015 milligrams/amp-hour as measured after add-on air pollution control device(s)[3]
> 330 feet	≤ 50,000	0.01 milligrams/amp-hour with use of chemical fume suppressants as specified in section 93102.8
> 330 feet	> 50,000 and ≤ 500,000	0.0015 milligrams/amp-hour
> 330 feet	> 500,000	0.0015 milligrams/amp-hour as measured after add-on air pollution control device(s)

[1] Distance measured as specified in section 93102.4(b)(2)(A).

[2] Alternatively, a facility may install an add-on air pollution control device(s) that controls emissions to below 0.0015 milligrams per amp-hour.

[3] When annual emissions exceed 15 grams, a site specific risk analysis must be conducted, unless a site-specific risk analysis has already been conducted and approved by the District.

M. Chrome Plating Industry Survey Results

In August 2018, CARB staff conducted a survey of chrome plating facilities to help understand the current industry operating practices and inform regulatory development. The survey was distributed both electronically and by U.S. mail to approximately 150 chrome plating facilities. They were distributed as follows: 115 in the South Coast Air Basin (South Coast), 11 in the Bay Area, 10 in San Joaquin Valley, 4 in the Sacramento area, 4 in the San Diego area, and 2 in Feather River and Ventura County areas. Out of 150 facilities, 61 responded to CARB's survey. Since the survey was sent out, 33 facilities have ceased their operations. The following Subsections (1)–(5) provide the results of CARB's survey.

1. Facility Types and Operating Conditions

Of the 61 facilities that responded to the survey, 35 were in the South Coast and 26 were located outside of the South Coast. CARB received responses from 74 percent of the facilities outside of South Coast and 30 percent of the facilities in South Coast. CARB staff anticipated the lower response rate for facilities located in the South Coast because these facilities had just recently completed a similar survey for South Coast AQMD as part of their rulemaking. Table I.3 below shows the total number of facilities, by facility plating type, that responded to the survey.

Table I.3 Facilities that Responded to CARB's Survey by Plating Type

Plating Type	Number of Facilities
Decorative	29
Hard	23
Chromic Acid Anodizing	9
Total	61

Facilities were asked to provide information regarding the number and type of metal finishing tanks used in their operations and the operating parameters for their tanks. Operating parameters included average surface area, average bath temperature, and average concentration of hexavalent chromium, if applicable. Table I.4 below shows the operating parameters for the various chrome plating tanks.

Table I.4 Tank Average Operating Parameters

Plating Type	Number of Tanks	Average Surface Area (ft^2)	Average Bath Temperature (°F)	Average Concentration of Hexavalent Chromium (ppm)
Decorative Plating (with hexavalent chromium)	31	22	105	153,805
Decorative Plating (with trivalent chromium)	10	42	113	N/A
Hard Plating	76	27	133	216,902
Chromic Acid Anodizing	11	32	91	39,076

2. Control Technologies in Use

At the time of the survey, most hard chrome plating facilities were using a combination of control technologies, such as in-tank chemical fume suppressants, mechanical fume suppressants, and add-on control technologies, such as scrubbers or HEPA filtration. Fifty out of 76 hard plating tanks (66 percent) had a control system using one or two types of emission controls, and the remaining 26 tanks (34 percent) were using more than two types of emission controls. The majority (90 percent) of hard chrome plating facilities used HEPA filtration. About 14 out of 41 decorative chrome plating tanks (34 percent) used only chemical fume suppressant as emission controls and 29 out of 41 decorative chrome plating tanks (70 percent) used add-on control(s) in conjunction with a chemical fume suppressant.

For chromic acid anodizing tanks, 7 out of 11 tanks (64 percent) were controlled with both a chemical fume suppressant and add-on control technology. Overall, 45 tanks out 128 were using only one emission control, 33 tanks were using two emission controls, and 50 tanks were using more than two emission controls (see Table I.6).

Table I.5 below shows the number of tanks for each plating type and the various air pollution control technologies used.

Table I.5 Air Pollution Emission Controls for Chrome Plating Tanks Using Hexavalent Chromium

Plating Type	Number of Tanks	Chemical Fume Suppressant	Mechanical Fume Suppressant	Foam Blanket	Packed Bed Scrubber	Composite Mesh Pad	HEPA	Ultra-low Particulate Air	Encapsulated Tank Cover	Mist Eliminator
Hard	76	11	20	0	7	30	68	4	9	7
Decorative	31	29	1	4	4	12	14	0	0	7
Chromic Acid Anodizing	11	7	1	0	1	8	9	0	1	1
Total	**118**	**47**	**22**	**4**	**12**	**50**	**91**	**4**	**10**	**15**

Table I.6 below shows the number of emission controls for each tank corresponding to each chrome plating type.

Table I.6 Number of Emission Controls for Chrome Plating Tanks Using Hexavalent Chromium

Plating Type	One Emission Control	Two Emission Controls	More than Two Emission Controls
Hard	23	27	26
Decorative	20	3	18
Chromic Acid Anodizing	2	3	6
Total	**45**	**33**	**50**

3. Fume Suppressants Used as Emission Control

Out of 22 hard chrome plating facilities, 15 facilities were not using chemical fume suppressants, and 7 facilities used chemical fume suppressants and other control(s). Out of 29 decorative chrome plating facilities, 5 facilities were not using chemical fume suppressants, 13 facilities were using chemical fume suppressants only, and 11 facilities used chemical fume suppressants in combination with other control(s). Out of 8 chromic acid anodizing facilities, 3 facilities were not using chemical fume suppressants and 5 facilities used chemical fume suppressants in combination with other control(s).

Table I.7 below shows the number of facilities by chrome plating type that were or were not using chemical fume suppressants or were using chemical fume suppressants and other emission control methods.

Table I.7 Chemical Fume Suppressant Use

Chrome Plating Facility Type	Not Using Chemical Fume Suppressant	Using Chemical Fume Suppressant Only	Using Chemical Fume Suppressant and Other Emission Control(s)
Hard	15	0	7
Decorative	5	13	12
Chromic Acid Anodizing	3	0	5
Total	**23**	**13**	**24**

Overall, a total of 37 facilities used chemical fume suppressants. Of these, 16 facilities used less than 2 gallons per year, 7 facilities used between 2 and 5 gallons per year, 4 facilities used between 5 and 10 gallons per year, 8 facilities used more than 10 gallons per year, and 2 facilities did not provide the quantity of chemical fume suppressants used.

Table I.8 below shows the number of facilities that were using chemical fume suppressant and the quantity of chemical fume suppressants used annually.

Table I.8 Number of Chrome Plating Facilities Using Chemical Fume Suppressant and Annual Usage

Chrome Plating Type	Number of Facilities	≤2 gallons/year	>2 to 5 gallons/year	>5 to 10 gallons/year	>10 gallons/year
Hard	6	1	1	2	2
Decorative	25	15	4	1	4
Chromic Acid Anodizing	6	0	2	1	2
Total	**37**	**16**	**7**	**4**	**8**

Table I.9 shows the types of chemical fume suppressant used by facilities.

Table I.9 Types of Chemical Fume Suppressant by Facility Type

Facility Type	HCA-8.4	Dicolloy CRFF	Fumetrol 21F2	Macuplex STR NPFX	Envirochrome 2 Wetter
Hard Plating	1	0	5	0	0
Decorative	6	2	0	16	1
Chromic Acid Anodizing	3	1	2	0	0
Total	**10**	**3**	**7**	**16**	**1**

4. Housekeeping Methods and Wastewater Processing

The most common housekeeping clean-up methods used by chrome plating facilities were hand wet mop, damp cloth, and HEPA vacuum. Overall, from the total of 61 facilities, 36 facilities used a hand wet mop, 34 facilities used a damp cloth, 18 facilities used a HEPA vacuum, 6 facilities used a wet wash system, 4 facilities used a non-toxic chemical dust suppressant, 13 facilities used a low-pressure spray nozzle, and 7 facilities used other cleaning methods. Some facilities used multiple cleaning methods. Facilities using more than one cleaning method were counted separately, and 5 facilities did not provide a response to

this question. In addition, most facilities indicated they conduct housekeeping daily or weekly. Table I.10 below shows the various clean-up methods used by facilities for housekeeping.

Table I.10 Clean Up Methods by Chrome Plating Type

Chrome Plating Type	Hand Wet Mop	Damp Cloth	HEPA Vacuum	Wet Wash System	Non-toxic Chemical Dust Suppressant	Low Pressure Spray Nozzle	Other	No Answer
Hard	15	16	7	5	2	7	2	3
Decorative	13	10	6	1	1	4	5	2
Chromic Acid Anodizing	8	8	5	0	1	2	0	0
Total	**36**	**34**	**18**	**6**	**4**	**13**	**7**	**5**

The survey also asked about wastewater processing. The majority of facilities used either a closed-loop rinse water system or a combination of two or more methods. Table I.11 shows how facilities processed their wastewater.

Table I.11 Wastewater Processing by Chrome Plating Type

Chrome Plating Type	Discharge wastewater to treatment plant	Closed loop rinse wastewater system	Treat wastewater offsite	Transfer wastewater offsite	Combination of two or more treatments	Other	No Answer
Hard	1	9	1	3	8	0	1
Decorative	3	6	3	1	14	1	1
Chromic Acid Anodizing	0	1	5	0	3	0	0
Total	**4**	**16**	**9**	**4**	**25**	**1**	**2**

5. Department of Defense, Military, or Other Specifications

Facility operators provided information about Department of Defense (DOD) military standard (MIL-SPEC) related to their chrome plating operations. DOD MIL-SPECs are specified by facility's customers and are not requirements that are imposed by government agencies on the plating facility. Customers can require that facilities plate their parts to the specific DOD MIL-SPEC if the parts need to meet specific performance standards for their specific application.

Table I.12 shows that 18 facilities (8 hard plating, 2 decorative plating, and 8 chromic acid anodizing) need to follow DOD MIL-SPEC and 43 facilities (15 hard plating, 27 decorative plating, and one chromic acid anodizing) don't need to follow DOD MIL-SPEC. In addition, a total of 21 facilities need to follow other specifications (non-DOD MIL-SPEC) and 40 don't need to meet non-DOD MIL-SPEC (see Section III. (F) for more information on DOD MIL-Spec).

Table I.12 Number of Chrome Plating Facilities Following DOD MIL-SPEC or non-DOD MIL-SPEC

Plating Type	Following DOD MIL-SPEC (# of facilities)		Following Non-DOD MIL-SPEC (# of facilities)	
	Yes	No	Yes	No
Hard	8	15	10	13
Decorative	2	27	4	25
Chromic Acid Anodizing	8	1	7	2
Total	18	43	21	40

N. Water Boards Statewide PFAS Investigation

In July 2018, the State Water Resources Control Board (SWRCB or Water Boards) began a statewide investigation to evaluate the level of PFAS in drinking water. Since then, nearly 1,000 investigation orders were issued to airports, landfills, chrome plating facilities, publicly owned treatment works, bulk fuel terminals, and refineries. In March and October 2019, the Water Boards issued water quality investigative orders to different industries, such as: commercial airports with training or fire response sites, municipal solid waste landfills, chrome plating facilities, and other industries. These investigative orders included questionnaires on the facility's potential PFAS releases into the environment. Currently, the investigation is ongoing and Water Boards staff continue working on monitoring, reviewing, and analyzing the data. Water Boards staff plans to provide a summary of the findings from the ongoing statewide PFAS investigations to SWRCB in 2023.[25] The PFAS program is assimilating the information from these investigations and moving into a phase of developing management, monitoring, and treatment strategies for PFAS.

O. Federal Regulations

U.S. EPA has developed several National Emission Standards for Hazardous Air Pollutants (NESHAPs) to address health risks associated with emissions of hazardous air pollutants (HAPs) from stationary sources. In January 1995, U.S. EPA promulgated the Chrome Plating NESHAP (40 Code of Federal Regulations, Part 63, Subpart N). The Chrome Plating NESHAP was enacted because U.S. EPA identified chrome plating tanks as significant emitters of chromium compounds, which are HAPs. 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 for the hard chrome plating facilities to meet concentration standards. In addition, surface tension standards were established for decorative chrome plating facilities and chromic acid anodizing facilities.

On July 19, 2004, U.S. EPA amended the Chrome Plating NESHAP to: allow the use of chemical fume suppressants to control chromium emissions; provide an alternative standard for hard chrome plating tanks equipped with enclosed hoods; modify surface tension parameter testing; expand the definition of "chromium electroplating and anodizing";

[25] *SWRCB Board Meeting Session-April 5, 2022*

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 Chrome Plating NESHAP to include the revisions to the emissions 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 PFOS. PFOS is an organic chemical identified as being potentially carcinogenic with health and safety concerns.[26]

P. Current Local Air District Rules

State law requires California's air quality management and air pollution control districts (Districts) to adopt, implement, and enforce any ATCM adopted by CARB on nonvehicular sources within their jurisdiction (Health & Saf. Code § 39666, subd. (d)). Alternatively, Districts may elect to adopt a rule that is equally effective or more stringent than CARB's ATCM. Table I.13 lists Districts that have active chrome plating facilities and the local rule applicable to facilities in that local air district. San Diego and Ventura County Air Pollution Control Districts have adopted the 2007 ATCM as their rule.

Table I.13 Local Air Districts with Chrome Plating Rules

District	Rule
Bay Area Air Quality Management District	Rule 11.8
Feather River Air Quality Management District	Rule 11.2
South Coast Air Quality Management District	Rule 1469
Sacramento Metropolitan Air Quality Management District	Rule 904
San Diego County Air Pollution Control District	2007 ATCM
San Joaquin Valley Air Pollution Control District	Rule 7011
Shasta County Air Quality Management District	Rule 3.18
Ventura County Air Pollution Control District	2007 ATCM

The most stringent district rule covering chrome plating operations is South Coast AQMD Rule 1469, Hexavalent Chromium Emissions from Chrome Plating and Chromic Acid Anodizing Operations. Rule 1469 was originally adopted on October 9, 1998, and subsequently amended on May 2, 2003, December 5, 2008, November 2, 2018, and April 2, 2021. The purpose of this rule is to reduce hexavalent chromium emissions from facilities that perform chrome plating operations and other activities that are generally associated with chrome plating operations. Rule 1469 requires use of a chemical fume suppressant certified by South Coast AQMD but prohibits the addition of chemical fume suppressants containing PFOS to any chrome plating tank because PFOS usage is prohibited by U.S. EPA.

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

Q. Proposed Amendments

CARB staff are proposing amendments to the Chrome Plating ATCM that require the phase out of hexavalent chromium from use in all chrome plating facilities in California. Prior to the phase out date, functional chrome plating facilities will also be required to implement measures designed to limit direct emissions from tanks as well as fugitive emissions from the facility.

The major components of the Proposed Amendments that apply to all types of chrome plating include:

- No person shall construct or operate any new chrome plating facilities in the state that use hexavalent chromium after January 1, 2024.
- Owners or operators of existing chrome plating facilities may only 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 modified or additional hexavalent chromium tanks meet all applicable requirements.

The major components of the Proposed Amendments that differ by plating type are presented below:

1. Decorative Plating

Decorative chrome plating facilities will be required to phase out the use of hexavalent chromium by January 1, 2027. A one-year extension may be granted if the District determines that the facility needs more time to procure or install equipment or to complete the permitting or construction necessary to transition to alternatives to hexavalent chromium.

2. Functional Plating

Functional chrome plating facilities will be required to phase out the use of hexavalent chromium by January 1, 2039.

Major requirements of the Proposed Amendments applicable to functional plating facilities to reduce emissions prior to the 2039 phase out include:

- By January 1, 2024, functional chrome plating facilities will be required to comply with enhanced housekeeping requirements.
- By July 1, 2024, functional chrome plating facilities will be required to comply with enhanced best management practices.
- By January 1, 2026, 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(amp-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.

Further, the Proposed Amendments require CARB to conduct two technology reviews to be completed by January 1, 2032, and January 1, 2036. The reviews will assess the availability of less toxic alternative technologies that can be used to replace hexavalent chromium in functional chrome plating operations. Based on the findings of the technology reviews, CARB staff may propose further amendments for consideration by the Board, which could include adjusting the deadline for the phase out.

II. The Problem that the Proposal is Intended to Address

A. Need to Reduce Health Risk

The Proposed Amendments are designed to eliminate emissions of hexavalent chromium, a highly potent TAC identified as a human carcinogen with no known safe exposure level, from the chrome plating industry in California. The 2007 ATCM has reduced substantial amounts of hexavalent chromium emissions from these facilities; however, fugitive emissions continue to endanger the health of Californians (see Section II.(B)). Due to the availability of less toxic alternatives for some hexavalent chromium plating processes, more can be done to further reduce hexavalent chromium emissions to minimize health risks in communities near these facilities. CARB's mission is to promote and protect public health, welfare, and ecological resources through effective reduction of air pollutants. To ensure that regulations support this mission, CARB periodically reviews existing ATCMs to determine if they continue to maximize public health protection.

Health and Safety Code section 39666, subdivision (a) directs CARB to adopt ATCMs to reduce emissions of TACs from nonvehicular sources. As mentioned before, hexavalent chromium is one of the most potent carcinogens identified as a TAC, with no known safe level of exposure, and it continues to be emitted from chrome plating facilities, resulting in elevated health risk to their surrounding communities. For TACs with no identified safe level of exposure, Health and Safety Code section 39666, subdivision (c) requires the ATCM to reduce emissions to the lowest level achievable through application of the best available control technology or a more effective control method, unless CARB determines, based on an assessment of risk, that an alternative level of emission reduction is adequate or necessary to prevent an endangerment of public health. The ATCM must be designed in consideration of the factors specified in Health and Safety Code section 39665, subdivision (b), including the characteristics of the pollutant and emissions, health risks, environmental impacts, and costs.

1. Characteristics of Hexavalent Chromium and Chromium Compounds

The chromium compounds of interest for this staff report are the TACs hexavalent chromium and trivalent chromium. Because hexavalent chromium is a TAC that has been identified as a human carcinogen with no known safe exposure level, staff's proposal is designed to reduce

hexavalent chromium emissions from chrome plating facilities to the lowest achievable emission level in consideration of the statutory factors discussed above.

Although trivalent chromium has also been identified as a TAC, it is significantly less toxic and is not a human carcinogen (more information on the health effects can be found in Section III. (F)). Due to the lower toxicity, trivalent chromium is a safer alternative to hexavalent chromium. Trivalent chromium occurs naturally in the mineral chromite (chrome ore). It is from chromite that chromium metal and other chromium compounds are formed. Of the various chromium oxidation states, trivalent chromium is the most stable. Hexavalent chromium is the cation of a metal salt and does not occur naturally. Generally, hexavalent chromium ions are produced under strong oxidizing conditions from metallic chromium, with the most common ions being chromate ion (CrO_4^{-2}) or dichromate ion ($Cr_2O_7^{-2}$). Hexavalent chromium ions are strong oxidizing agents and are readily reduced to trivalent chromium in acid or by organic matter.

2. Ambient Concentrations of Hexavalent Chromium and Chromium Compounds via CARB Air Toxics Network

Chromium compounds, including hexavalent chromium, are routinely monitored as part of CARB's statewide ambient air toxics monitoring network. This monitoring is designed to measure background concentration levels and not targeted source specific ambient concentration levels. Therefore, this monitoring does not reflect near source exposures, which can be significant. Trivalent chromium compounds are not specifically monitored but are accounted for as a fraction of the total chromium detected. This is accomplished by subtracting hexavalent chromium from total chromium.[27] The monitoring results indicate that hexavalent chromium concentrations have declined in recent years. The statewide mean concentration of hexavalent chromium has decreased from 0.091 nanograms per cubic meter (ng/m^3) in 2005 to 0.039 ng/m^3 in 2019. For hexavalent chromium ambient monitoring, the limit of detection (LOD) has also decreased from 0.06 ng/m^3 in 2002 to 0.043 ng/m^3 in 2019.[28] The yearly average is below the LOD because samples that measure below the LOD get reported as one half the detection limit.

3. Indoor Sources and Concentration of Hexavalent Chromium

The extent of exposure to airborne hexavalent chromium in the indoor environment, other than in the workplace, is not known. During the emission testing program conducted by CARB for the 2007 amendments to the Chrome Plating ATCM, staff placed ambient air monitors inside the plating shops that were being source tested. Indoor levels of hexavalent chromium detected in the chrome plating facilities tested without forced ventilation systems in place ranged from 4 to 2,350 ng/m^3. However, no indoor sampling has been conducted since the 2007 ATCM. These data are qualitative, and the numbers should not be used to

[27] *Source Test Report Anaplex*
[28] *Annual Toxics Summaries !ADAM*

represent indoor air concentrations. However, the numbers clearly indicate that hexavalent chromium is emitted from chrome plating tanks and is present as an airborne particle.

4. Atmospheric Persistence

Atmospheric reactions of chromium compounds were characterized in field reaction studies and laboratory chamber tests. These results demonstrated an average experimental half-life of 13 hours (CARB, 1997). Based on this, one would expect there to be some amounts of hexavalent chromium in the dust found in and around the chrome plating facilities. However, during CARB's Barrio Logan study, and during a later San Diego County APCD study, analysis of indoor dust collected at chrome plating facilities showed that hexavalent chromium was present. Hexavalent chromium concentrations in samples collected near the chrome plating tank ranged from 407 to 89,800 milligrams per kilogram. These results are summarized in Appendix G of 2006 Chrome Plating ATCM Staff Report.[29]

5. Particle Size of Hexavalent Chromium

The potential of hexavalent chromium to become airborne and disperse into ambient air is dependent on particle size. If the particles are too large, they will either not become airborne, or will become airborne momentarily before rapidly settling onto a surface. CARB's indoor air data collected during the emissions testing program demonstrate that hexavalent chromium is present in ambient air inside facilities (as discussed in Section II.(A)(3)). The modeling analyses in Section VI are based on hexavalent chromium particles being small enough to disperse as a gas after they are emitted into ambient air. To verify this, staff consulted the U.S. EPA Compilation of Air Pollutant Emissions Factors (AP-42) and found that hexavalent chromium particles are generally eight micrometers or smaller in diameter. Particles of this size are thought to disperse as a gas (U.S. EPA, 1996).[30,31] Therefore, CARB staff determined that dispersion modeling analyses appropriately predict how hexavalent chromium is dispersed into the outside ambient air.

B. Hexavalent Chromium Air Monitoring in the City of Paramount

1. Air Monitoring During 2013 Through 2016

In 2013, in response to a series of odor complaints from residents in the City of Paramount, South Coast AQMD staff began an investigation and conducted an air sampling study to determine the source of emissions and identify potential air pollution control strategies. South Coast AQMD staff conducted an extensive air monitoring project in the Paramount area, with three monitors in communities near metal processing facilities. On August 10, 2016, South Coast AQMD issued a report on air monitoring in Paramount and a

[29] *2006 Chrome ATCM_ISOR_Appendix_G*
[30] *USA EPA AP-42_Compilation of Air Emissions Factors*
[31] *US EPA 1996 Particle Size Distribution*

preliminary assessment of health impacts.[32] The air monitoring report showed higher levels of nickel, total chromium, and hexavalent chromium in the areas located very close to industrial areas, but lower levels in the Paramount neighborhoods just a few blocks downwind. Because hexavalent chromium is the most toxic form of chromium, it was assessed separately from total chromium. Table II.1 shows a summary of the metal concentration measured at the Vermont Avenue site.

In addition, South Coast AQMD staff have conducted several air toxics monitoring and evaluation studies that show exposures and risk within the South Coast Air Basin. The most recent of these studies, the Multiple Air Toxics Exposure Study V (MATES V) shows the results of the air toxics evaluation effort. The August 10, 2016, South Coast AQMD air monitoring in Paramount report includes an analysis comparing the results of these air toxic metal pollutant measurements to those pollutants found at the monitoring station in Compton, which is the monitoring station located closest to Paramount City that was included in South Coast AQMD's Multiple Air Toxics Exposure Study (MATES IV) study. The MATES IV study provides a regional estimate of the background or expected levels of air toxic pollution in 2012-2013 from 10 locations throughout the South Coast Air Basin.[33]

The purpose of this comparison was to check whether the levels measured in the Paramount community were relatively consistent with air toxics monitoring data across the South Coast Air Basin. In this comparison, concentrations of hexavalent chromium were found to be higher at one site, located in the city of Paramount, on Vermont Avenue between Somerset Boulevard and Jefferson Street, compared to the areas analyzed in the MATES IV study. The location of the Vermont Ave site was selected because of close proximity to a metal forging facility and to different toxic emission sources such as chrome plating facilities, body shops, dry cleaners, warehouse and distribution centers, oil and gas drill sites, chemical plant sites, and other industrial manufacturing facilities. Table II.1 shows the hexavalent chromium concentrations at the Vermont Avenue site compared to the MATES V study reports for the site located in Compton through 2019.[34] Figure II.1 below shows the hexavalent chromium concentrations at the Vermont Avenue site compared to the MATES IV (years 2012-2013) site located in Compton. As shown in Table II.1 and Figure II.1, hexavalent chromium levels measured at the Vermont Avenue site are consistently higher than monitoring data from Compton.

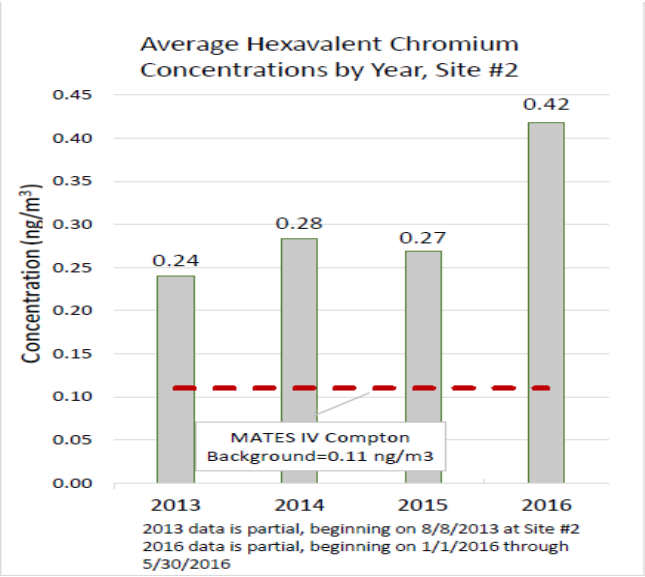
[32] *South Coast AQMD Air Monitoring in Paramount Community Report*
[33] *MATES IV*
[34] *MATES V*

Table II.1 Average Metal Concentrations at Vermont Avenue Site and Compton Site

Pollutant (ng/m^3)[1]	MDL[2]	Chronic REL[3]	OEHHA Cancer Potency Factor (Y/N)	Vermont Ave. Site Average Years (2013-2016)	MATES V Compton Ave. Site Average Years (2012-2013)	MATES V Compton Ave. Site Average Years (2018-2019)[4]
Nickel	4.3	14	Y	18.2	4.1	3.0
Total Chromium	5.4	0[5]	N	23.1	3.7	No Data
Hexavalent Chromium	0.004	200	Y	0.292	0.1	0.055
Arsenic	6.7	15	Y	ND[6]	0.5	ND
Cadmium	20	20	Y	ND	0.1	ND
Lead	13	N/A	Y	ND	6.2	ND
Manganese	7.2	90	N	26.1	18.6	18
Selenium	12	20000	N	ND	0.8	0.51

[1] This table presents metals where OEHHA has an established chronic REL or cancer risk factor. Total Chromium is included as a comparison point, but it doesn't have a chronic REL or cancer risk factor.
[2] Method Detection Limit (MDL)
[3] Reference Exposure Level (REL)
[4] Different laboratory methods were used in Paramount City monitoring versus Compton station.
[5] Total Chromium is included as a comparison point, but it doesn't have a chronic REL or cancer risk factor.
[6] Non-detects (ND) means the minimum concentration cannot be determined with a specified degree of confidence to be different from zero.

Figure II.1 Hexavalent Chromium Concentration at Vermont Avenue Site Compared to MATES IV



2. Air Monitoring During 2016 Through 2020

In July 2016, a larger number of air samplers were deployed to allow South Coast AQMD to better measure spatial and temporal variations of hexavalent chromium in the Paramount area and identify its potential sources.[35,36] Once potential sources were identified, the sampling strategy was adjusted to focus on specific facilities and on characterizing hexavalent chromium levels in adjacent communities. Highly elevated levels were found initially: the two highest levels measured were the November 2016 monthly average hexavalent chromium levels at 12 ng/m^3 and 11 ng/m^3, one of which was measured near a chrome plating facility. During the 2016 and 2017 timeframe, CARB provided sample equipment for the monitoring conducted at 38 community locations and 10 schools. Also in this timeframe, South Coast AQMD and other agencies performed many inspections and issued many Notices of Violation and Notices to Comply, requiring facilities to acquire permits and implement changes to operations to become compliant.

From March 1 to April 5, 2018, in addition to the monitoring effort mentioned above, South Coast AQMD staff performed an air monitoring campaign in the greater Los Angeles area, focusing on Paramount, Compton, Gardena, and the City of Industry using a mobile laboratory that was equipped with state-of-the-art instrumentation to measure a broad range of air toxic pollutants. The final report, dated January 2019, showed that hexavalent chromium was detected in Paramount above the instrumentation's detection thresholds.[37]

As a follow up to previous air toxics studies, MATES V focused on measurements during 2018 and 2019, with a comprehensive modeling analysis and emissions inventory based on 2018 data. The locations of the sites were generally the same as MATES IV to allow comparison over time. For the Compton site, the August 2021 final report shows the following concentrations for some of the pollutants listed on Table II.1: nickel 3 ng/m^3, hexavalent chromium 0.055 ng/m^3, manganese 18 ng/m^3, and selenium 0.51 ng/m^3. Comparing with MATES IV, the previous air toxics study that was conducted in 2012 to 2013, the concentration level of these pollutants was lower (range from 3.5 percent to 45 percent), with hexavalent chromium levels decreasing from 0.11 ng/m^3 to 0.055 ng/m^3. Reasons for the decrease in hexavalent chromium levels included South Coast AQMD's rule changes as well as reduced activity at cement plants and ongoing regulatory programs to reduce hexavalent chromium emissions from stationary sources such as metal processing facilities. Although these decreases do demonstrate significant progress in reducing hexavalent chromium emissions, these results indicate more needs to be done to reduce hexavalent chromium from all sources, including chrome platers, to protect public health in communities.

Starting in September 2018, the Paramount Unified School District partnered with Los Angeles County Department of Public Health to conduct periodic testing in two schools located near six chrome plating facilities. Samples taken in 2018 detected hexavalent chromium in two out of the four classrooms and the hexavalent chromium air concentrations

---

[35] *South Coast AQMD Monitoring Plan*

[36] *Summary of Efforts in Paramount 2016,2017*

[37] *Air Monitoring Methods in the South Coast Air Basin Final Report*

were 0.04 ng/m³ and 0.06 ng/m³. Samples at the four classrooms taken in August, 2019, were below detection limits.[38] Air quality monitoring data in Paramount is summarized in the April 2021 Paramount Emissions Investigation Fact Sheet.[39] This data showed a general decreasing trend in the monthly average hexavalent chromium levels near facilities in Paramount from 2016 to end of 2020.

C. CARB Monitoring Efforts

CARB conducted monitoring near chrome plating facilities in Northern California from July 2019 through January 2020. One decorative chrome plater and one hard chrome plater were chosen for the studies. Monitoring was conducted by CARB's Monitoring and Laboratory Division (MLD). While monitoring results only show concentrations that occurred during the sampling period and not over a long period, they are useful for showing trends and estimating relative health effects. For example, if a sensitive receptor is exposed to a concentration of 1.0 ng/m³ for 30 years, the associated potential cancer risk is approximately 360 chances per million.

The results near the functional plating facility showed that high concentrations of hexavalent chromium occurred downwind from the facility and near openings close to the plating area. The maximum monitored concentration near the openings of the plating area was 307 ng/m³. This reading occurred during a malfunction of the add-on air pollution control device. During this time, the upwind monitor concentration was 32.41 ng/m³ and downwind samples were 15.63 ng/m³. The next highest monitor reading at this location was 0.46 ng/m³. The overall average measurements during this period were estimated to be 27.98 ng/m³ (0.09 ng/m³ if the one high value was omitted). The results as measured downwind of the facility and at the edge of the facility property line control device showed a maximum of 23.15 ng/m³. Only one other monitored concentration was above 1 ng/m³ (measured value of 15.63 ng/m³). The average of all the readings was 3.39 ng/m³.[40] The results near the decorative plater showed that there were no elevated levels near the facility, with the highest downwind concentration being 0.093 ng/m³. However, there was very low activity at this plating shop during the sampling period.[41]

D. Need to Address State Policy and Plans Directing CARB to Achieve Airborne Toxics Emissions Reductions

CARB's mobile source control programs have made significant strides in reducing emissions from diesel particulate matter (PM) by transitioning to zero emission technologies and by revising and amending the mobile source diesel PM control measures. The approach CARB

---

[38] *Hexavalent Chromium in the City of Paramount*

[39] *Paramount Emissions Investigation Fact Sheet - April 2021*

[40] Air Monitoring Results for Hexavalent Chromium and Other Metals Around Chrome Plating and Chromic Acid Anodizing Operations – Facility 1.

[41] Air Monitoring Results for Hexavalent Chromium and Other Metals Around Chrome Plating and Chromic Acid Anodizing Operations – AAA Plating.

has taken to control diesel PM is to transition to electric power instead of cleaner diesel technology, where possible, to achieve zero emissions. CARB is committed to striving for zero emissions for other toxics, as technology permits, in order to protect the public health.

In 2017, in response to AB 617, CARB established the Community Air Protection Program (CAPP). CAPP's focus is to reduce exposure in communities most impacted by air pollution. AB 617 requires CARB to prepare a statewide strategy to reduce emissions of TACs in communities that experience disproportionate burdens from exposure to air pollutants. CARB's 2018 Community Air Protection Blueprint (Blueprint) sets forth CARB's strategy to reduce air pollution in these communities. The Blueprint explains that, in addition to impacts from large industrial facilities, such as oil refineries, communities suffer due to proximity to smaller sources like chrome platers, metal recycling facilities, oil and gas operations, and other sources of emissions, which contribute to localized air toxics impacts.

In the Blueprint, CARB restates a commitment to amend the Chrome Plating ATCM to reduce pollution in communities impacted by emissions from chrome plating facilities. Communities have expressed concerns regarding the toxicity of hexavalent chromium, which has higher cancer potency than diesel exhaust (per Consolidated Table of OEHHA/CARB Approved Risk Assessment Health Value). Staff determined that more needed to be done to reduce hexavalent chromium emissions from chrome plating facilities to further protect public health, including residents of disadvantaged or low income communities and communities of color.

The Proposed Amendments will eliminate hexavalent chromium emissions from the chrome plating industry in California entirely following the phase out of hexavalent chromium from chrome plating operations. Under the AB 617 program, CARB staff are also looking at other sources of hexavalent chromium emissions in these communities and will propose actions to reduce these exposures wherever feasible.

Approximately 14 percent of the chrome plating facilities in California are located within selected communities designated by AB 617, and 73 percent are located within disadvantaged communities that score between 75 to 100 (out of 100) on CalEnviroScreen 4.0.

Chrome plating facilities are often located near sensitive receptors such as schools, homes, and nursing and care facilities. Using the Google Earth® tool, staff determined that nine percent of chrome plating facilities in California are located in close proximity (less than approximately 300 meters) of schools. Nearly 30 percent of chrome plating facilities have sensitive receptors located within 100 meters. Approximately 10 percent of chrome plating facilities have sensitive receptors located within 20 meters. Figure II.2a and Figure II.2b show Google Earth® pictures of a chrome plating facility and the surrounding neighborhood, which includes a school and homes adjacent to the facility.

Figure II.2a Example of a Chrome Plating Facility and its Neighborhood

Figure II.3b Example of a Chrome Plating Facility and its Neighborhood

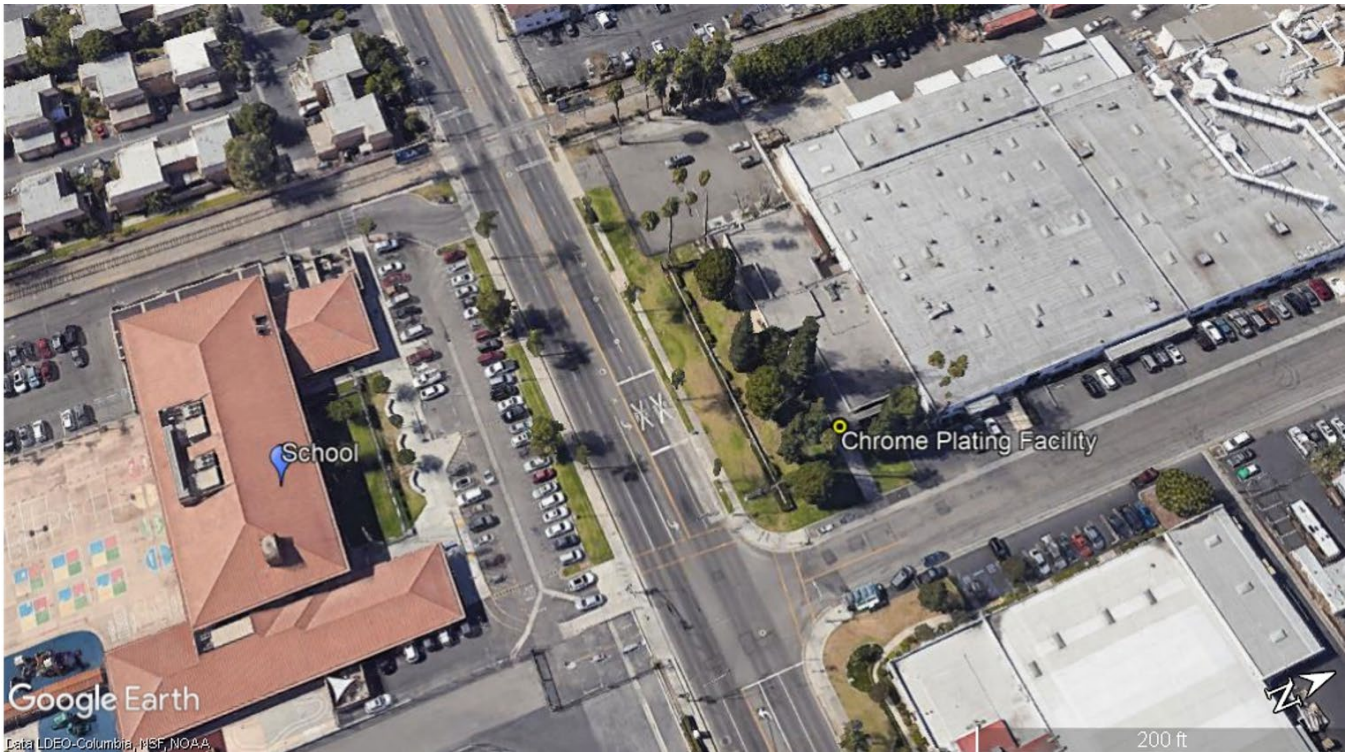
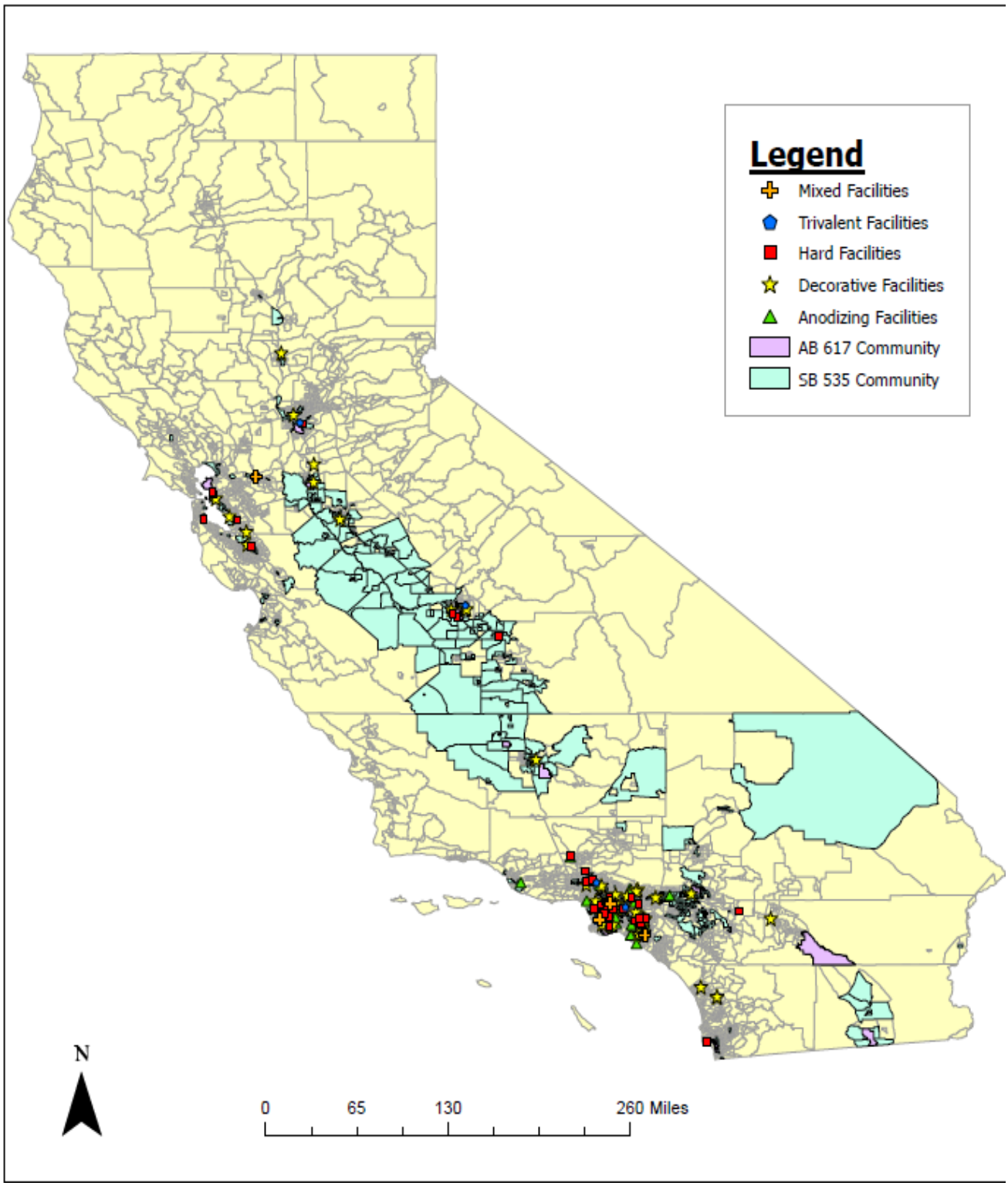


Figure II.3 shows the statewide distribution of chrome plating facilities and selected disadvantaged communities pursuant to AB 617 and SB 535.

Figure II.4 Chrome Platers in AB 617 and SB 535 Communities in California



Approximately 80 percent of chrome plating facilities are located in Southern California, 8 percent are located in the Bay Area, and another 8 percent are located in the Central Valley of California. Figure II.4 shows a map with chrome plating facilities near sensitive receptors in Southern California and within or near SB 535 communities. Figure II.5 shows the distribution of the chrome plating facilities in Southern California and their location in relation to AB 617 and SB 535 communities. Figure II.6 shows a map with chrome plating facilities in the Oakland/Berkeley region of the Bay Area and depicts their location near sensitive receptors and within or near SB 535 communities. Figure II.7 shows the distribution of these facilities in the broader Bay Area region within or near AB 617 and SB 535 communities. Figure II.8 shows the distribution of the chrome plating facilities in the Central Valley in relation to AB 617 and SB 535 communities.

Figure II.5 Chrome Platers in Southern California Near Sensitive Receptors and SB 535 Communities

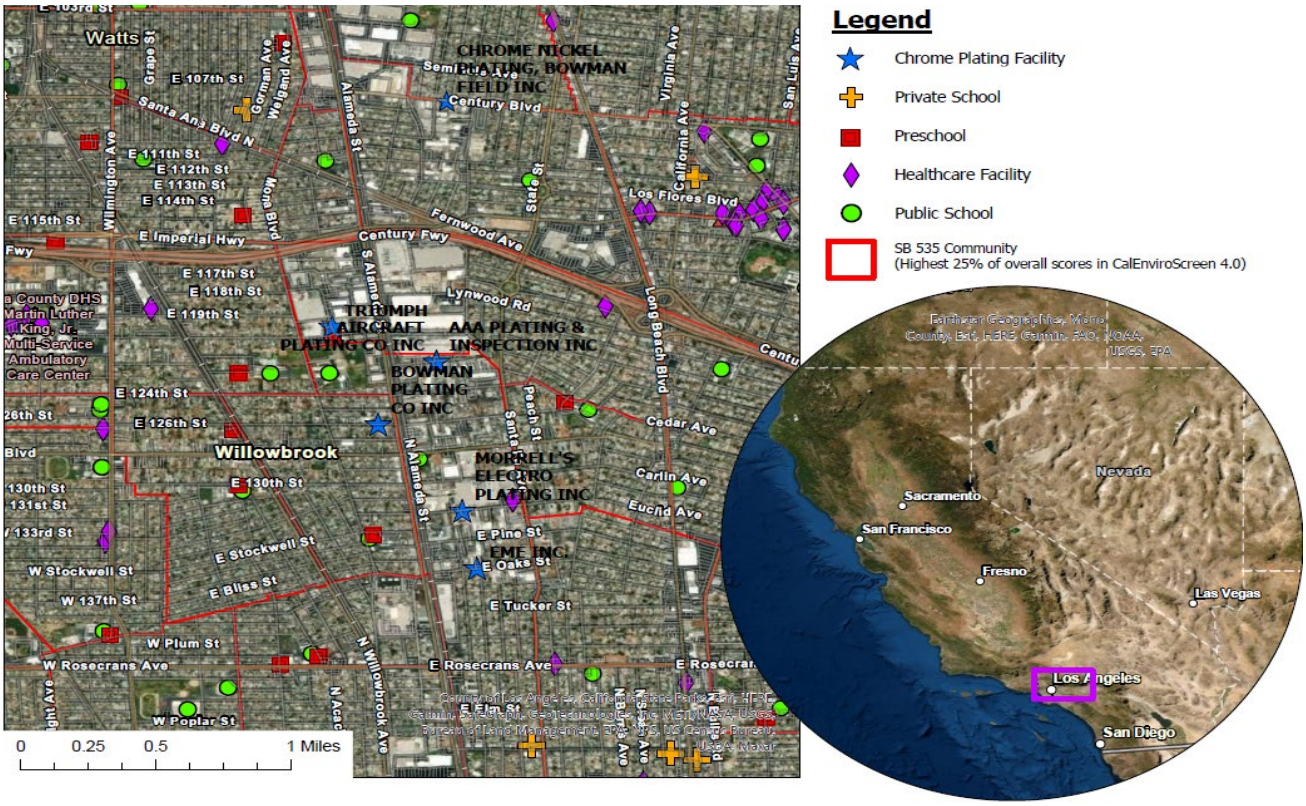


Figure II.6 Chrome Platers in AB 617 and SB 535 Communities in Southern California

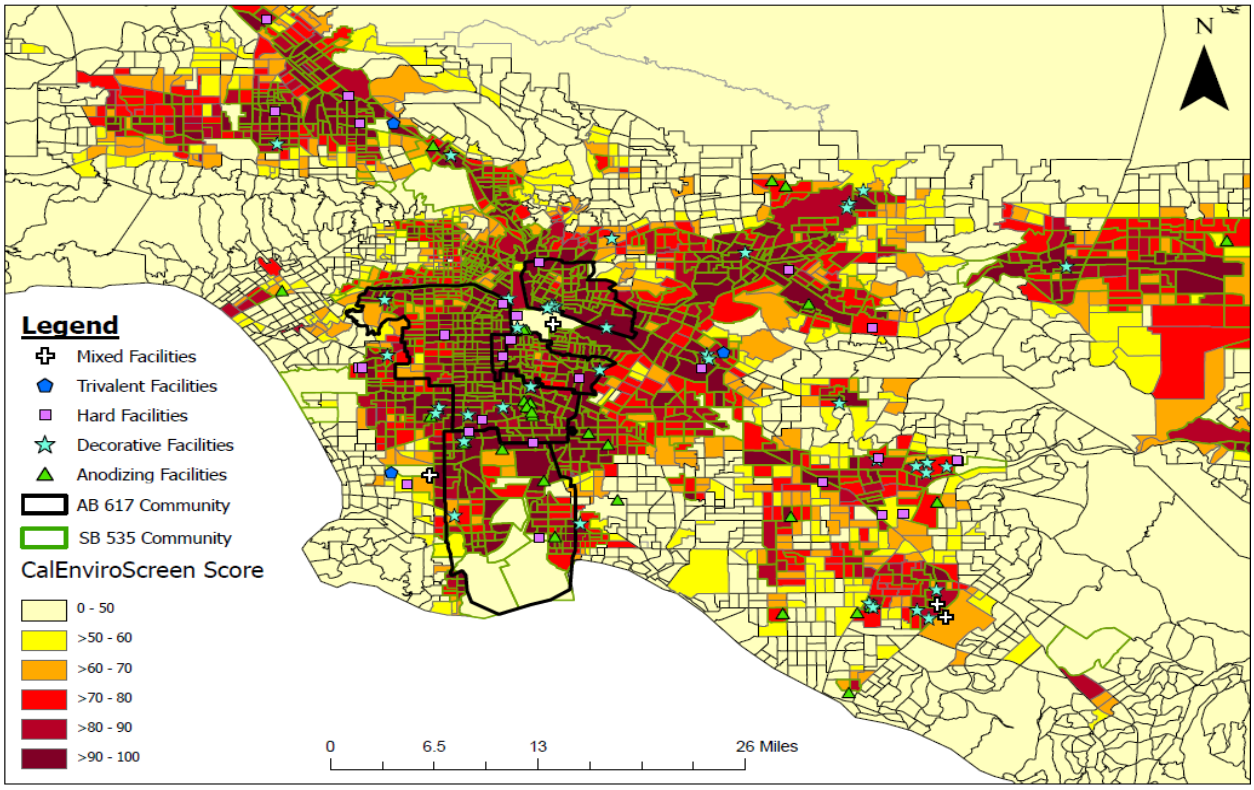


Figure II.7 Chrome Platers in the Bay Area Near Sensitive Receptors and SB 535 Communities

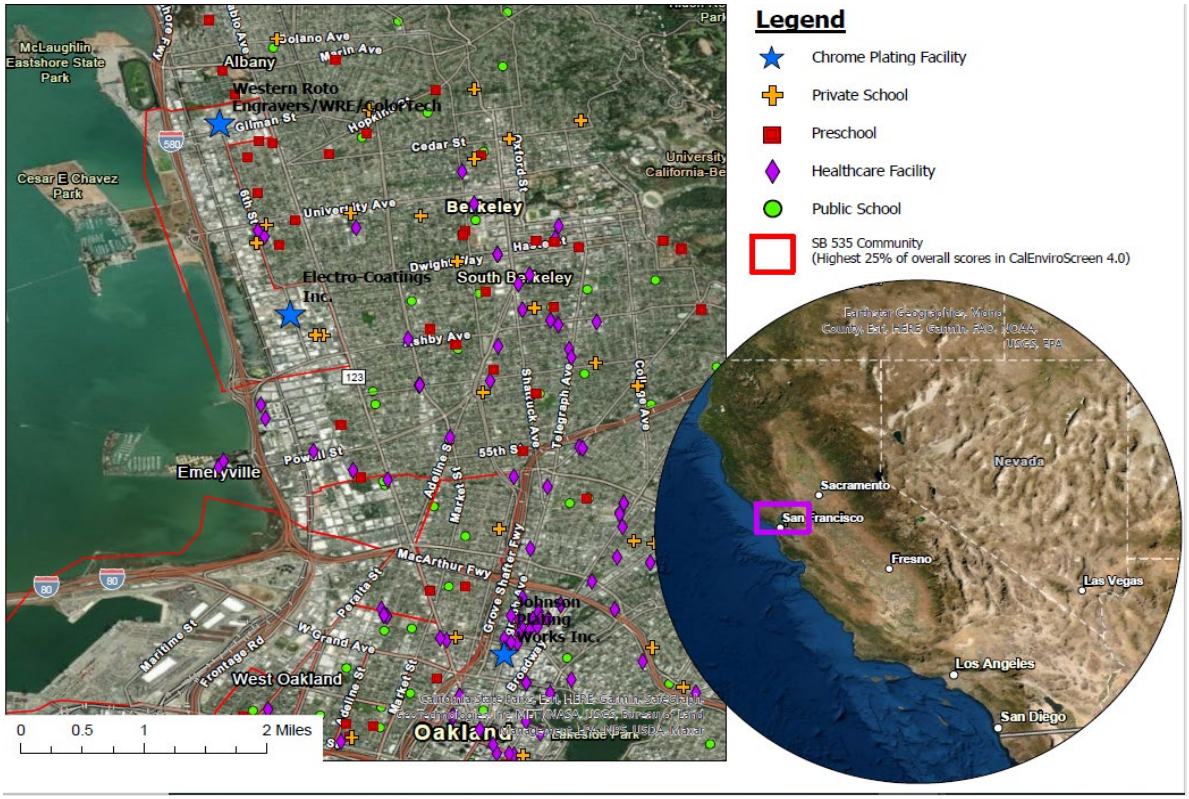


Figure II.8 Chrome Platers in AB 617 and SB 535 Communities in the Bay Area

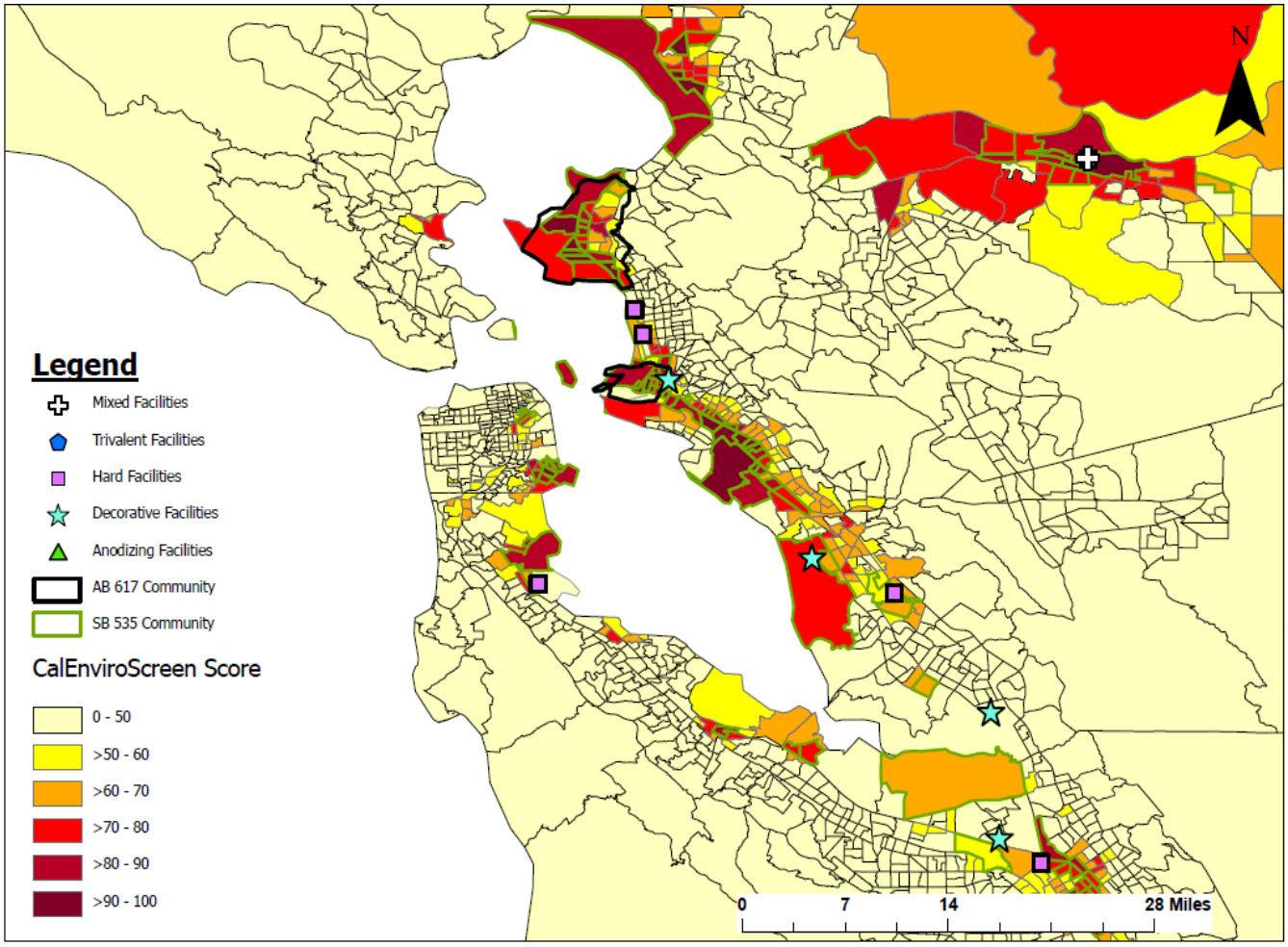
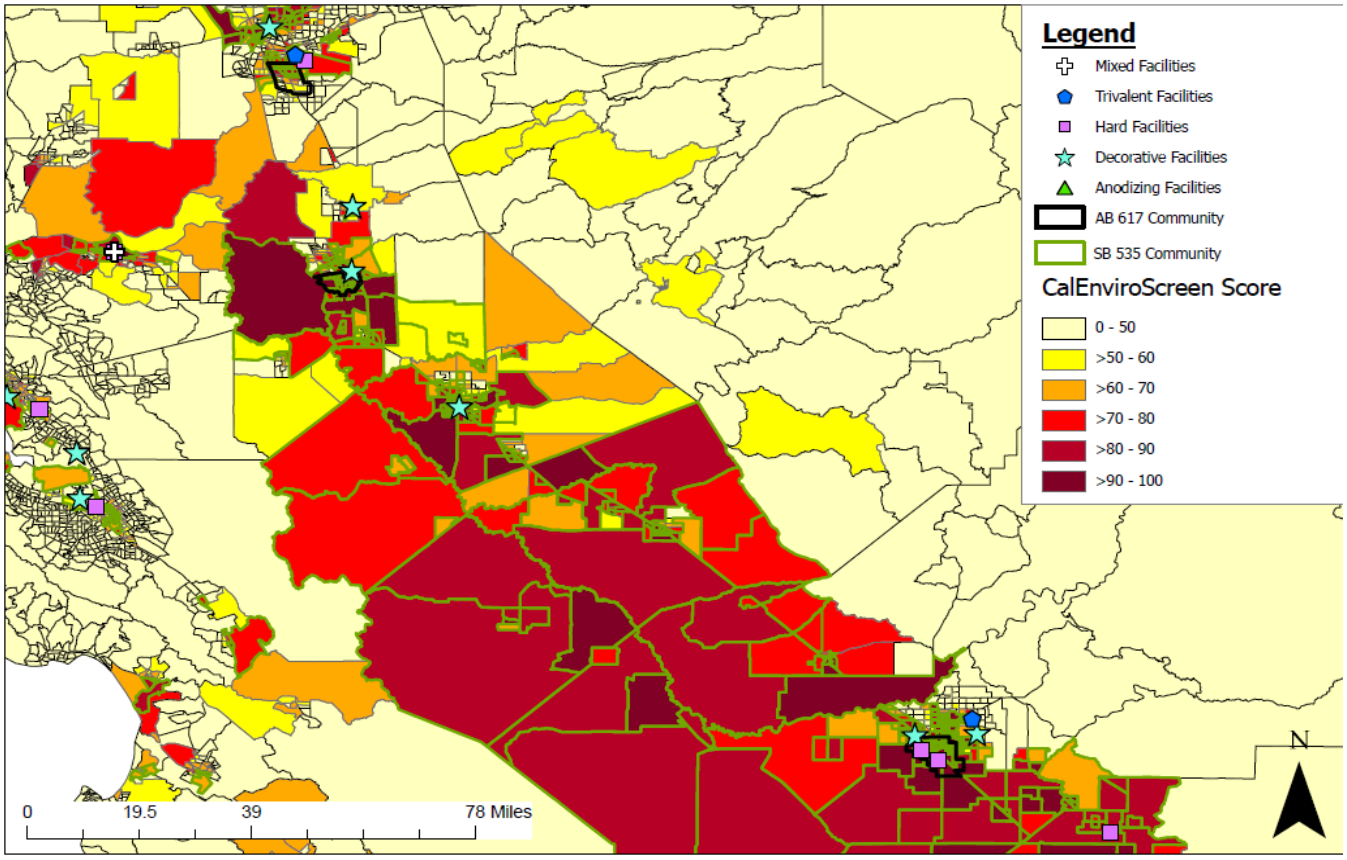


Figure II.9 Chrome Platers in AB 617 and SB 535 Communities in Central Valley California



III. Description of the Proposed Amendments

The Proposed Amendments are designed to reduce harmful hexavalent chromium emissions to the lowest level achievable and to decrease potential cancer risk in California communities near decorative and functional plating facilities. By 2027, the Proposed Amendments are expected to reduce statewide hexavalent chromium emissions from 51 decorative chrome plating operations to zero and reduce emissions from functional plating operations by 50 percent. By 2039, the Proposed Amendments are expected to reduce hexavalent chromium from 62 functional chrome plating facilities (36 hard chrome plating facilities and 26 chromic acid anodizing facilities) to zero. Hexavalent chromium emissions from chrome plating facilities come from plating tanks, emissions from drips or spills, uncaptured emissions from the controlled tanks, and any emissions from uncontrolled tanks containing hexavalent chromium in the facilities. Because control devices do not have 100 percent capture efficiency, some emissions will not be captured by the device and may be released into the atmosphere. Additionally, fugitive emissions, such as fugitive dust, can escape from the facility into the surrounding environment through openings. Fugitive emissions are not easily quantified but are addressed by the Proposed Amendments through enhanced housekeeping and building enclosure requirements and best management practices.

A co-benefit of the Proposed Amendments is the eventual elimination of PFAS used in fume suppressants at chrome plating facilities. PFAS compounds are currently used in chemical

fume suppressants used in hexavalent chromium plating operations. Trivalent chromium plating operations do not use chemical fume suppressants that contain PFAS. PFAS are highly fluorinated, complex chemicals that remain persistent in the environment for years. These chemicals are widely used in hundreds of products globally, with many opportunities for human exposure, and can have adverse health impacts. The toxicity of these chemicals varies, and people may be exposed to each chemical in different ways, in varying amounts, and with different mixtures. In 2020, through the National Defense Authorization Act (NDAA), Congress directed U.S. EPA to develop a process for prioritizing which PFAS compounds should be subject to additional research based on their potential for human exposure and the toxicity of the compound. As a result, U.S. EPA is currently working on identification and regulation of various PFAS chemical through their PFAS Roadmap.[42] U.S. EPA actions could vary from monitoring certain PFAS compounds to banning the use of certain compounds.

Similarly, the agencies within CalEPA have initiated efforts to eliminate PFAS from consumer products and in some industrial applications by enacting restrictions and requirements for the use of these chemicals. For instance, in November 2020, CARB adopted amendments to the proposed Regulation for the Reporting of Criteria Air Pollutant and Toxic Air Contaminants (CTR) and to the Air Toxics "Hot Spots" Emission Inventory Criteria and Guidelines (EICG) regulation, which includes PFAS reporting requirements. The Department of Toxic Substance Control (DTSC) has adopted regulations to list priority products pursuant to the Safer Consumer Products regulations due to concerns about the hazard traits of PFAS.[43,44] The priority products include carpets and rugs containing PFAS and treatments containing PFAS for use on converted textiles or leathers. Also, in July 2018, the Water Boards began a statewide PFAS response and investigation of impacts and sources of PFAS to public water supplies, which includes chrome plating facilities. Phasing out hexavalent chromium from chrome plating operations will eliminate the need for PFAS chemicals in chrome plating, which will decrease the health impacts that these chemicals may cause and remove one source of PFAS.

Staff estimated hexavalent chromium emissions based on data available for chrome plating operations. These calculations are based on the emission limits set forth in the 2007 ATCM and chrome plating facility data obtained from the Districts, which included permitted throughput, facility reported throughput, and source tested emission rates from chrome plating facilities in California. Baseline or normal conditions were estimated using 2019 facility throughput data when achievable because it reflects normal business conditions outside of the COVID-19 pandemic timeframe. Where facility throughput data is not available, permitted throughput limits are used to estimate emissions. Also, when source testing data is not available, Chrome Plating ATCM limits are used to estimate emission rates.

---

[42] *EPA PFAS Roadmap*
[43] *Priority Products*
[44] *Safer Consumer Products*

Table III.1 shows the estimated emissions from the chrome plating tanks at the facilities. This emission reduction calculation is based on the total number of facilities in operation, assuming that these facilities will remain in California. Emission estimates in Table III.1 also do not include estimates of fugitive emissions because they have not been quantified. Fugitive emissions include emissions coming off uncontrolled tanks and emissions that escape into the atmosphere through windows, doors, vents, or other openings. See Section VI.(B)(2) for more information on fugitive emissions and on the Proposed Amendments' preventive measures to reduce these emissions.

Table III.1 Summary of Estimated Emissions based on Air District Permit Limits, the 2007 ATCM Limit and Actual Emissions from Chrome Plating Facilities Before Phase Out Date

Facility Type	Quantity	Estimated Emissions of Hexavalent Chromium – Permitted Limits[1] (lbs/year)	Estimated Emissions of Hexavalent Chromium – ATCM Limits[2] (lbs/year)	Estimated Actual Emissions of Hexavalent Chromium[3] (lbs/year)
Decorative Chrome Plating	51	1.31	1.3	1.1[4]
Functional Chrome Plating	–	–	–	–
A) Hard Chrome Plating	36	8.64	2.5	1.1
B) Chromic Acid Anodizing	26	0.19	0.01	<0.01[5]
All	**113**	**10.15**	**3.81**	**2.2**

[1] Reflects District permitted throughput and the 2007 ATCM emission limits.
[2] Reflects facility's 2019 throughput and the 2007 ATCM emission limits.
[3] Reflects 2019 throughput and source test emissions.
[4] Based on the 2007 ATCM limits for facilities operating with fume suppressant only.
[5] 3.6e-06, based on one datapoint.

A. Phase Out of Hexavalent Chromium in Chrome Plating

The Proposed Amendments will phase out the use of hexavalent chromium from decorative chrome plating facilities by 2027. Trivalent chromium is currently available to replace hexavalent chromium for decorative chrome plating. Trivalent chromium technology can meet all performance specifications needed for decorative plated parts. Some stakeholders have expressed concern that the final deposit color is slightly different than the deposit color from hexavalent chromium, which may not meet the preferences of their customers. However, additives are being developed to improve the comparability of the final deposit color of trivalent chromium.

The Proposed Amendments will phase out hexavalent chromium from functional plating facilities (hard chrome plating and chromic acid anodizing facilities) by 2039. Alternatives to hexavalent chromium in functional chrome plating are at various stages of development and availability. Although some replacements are commercially available, they do not yet cover all applications for hard chrome plating and chromic acid anodizing. For example, trivalent chromium is being developed as an alternative to hexavalent chromium in the hard chrome plating process for some applications, but it is not yet available for all hard plating applications. After an alternative process has been developed that can universally meet the requirements of hard chrome plating, it may take years of performance testing to

demonstrate its ability to meet aerospace or DOD performance specifications. For other non-aerospace or DOD requirements, such as agricultural equipment or certain automotive applications, the performance testing may take less time as the performance specifications that need to be met are less rigorous. Therefore, staff have provided 15 years following the effective date of the Proposed Amendments for alternative technologies such as trivalent chromium technology to be developed and tested for hard chrome plating prior to the phase out date. Further, the Proposed Amendments require CARB to conduct two technology reviews by January 1, 2032, and January 1, 2036, and CARB staff may propose amendments based on the findings of those reviews, such as adjusting the timing of the phase out as needed.

The Proposed Amendments aim to encourage development of alternative technology, including trivalent chromium, as well as other compounds, like tartaric sulfuric acid and phosphoric sulfuric acid, which have been identified as safer alternatives for chromic acid anodizing. These compounds are being used for specific applications in the anodizing of aerospace components, but they are currently not able to replace chromic acid anodizing in all applications. Therefore, staff have provided 15 years following the effective date of the Proposed Amendments for trivalent chromium or other alternative technology to be developed and tested for chromic acid anodizing prior to instituting the phase out. More discussion of the alternatives can be found in Section III.(G).

To convert to trivalent chromium technology, a facility would need to replace current hexavalent chromium plating equipment (including tank(s), plating bath chemicals, and other associated equipment) with trivalent chromium plating equipment (including tank(s), ion exchange system, and other associated equipment), purchase chemicals/solvents required for the trivalent chromium plating process, and train staff to operate the new trivalent chromium plating process.

B. Source Testing

The source testing requirements in the Proposed Amendments apply to functional facilities that continue to use hexavalent chromium prior to the phase out in 2039. Source testing is required for add-on control equipment to verify that the Proposed Amendments' requirements are met. This is usually done by a third-party source testing provider hired by the facility operator. By January 1, 2026, functional facilities are required to conduct the first source test and must continue to perform source testing every two years thereafter.

C. Building Enclosures

The Proposed Amendments require existing functional facilities to comply with building enclosure requirements to reduce fugitive emissions from escaping into surrounding communities. These requirements limit openings in the building enclosure surrounding hexavalent chromium tanks and buffing, grinding, and polishing operations to 3.5 percent of the surface area of their building envelope. The percentage was calculated based on U.S. EPA's Method 204 for Permanent Total Enclosures, which restricts openings that exceed 5 percent of the surface area of the building enclosure. The Proposed Amendments set the

threshold at 3.5 percent because, unlike permanent total enclosures, the building enclosure itself is not required to be vented to an add-on air pollution control device under the Proposed Amendments.[45] Building enclosures reduce fugitive emissions by retaining hexavalent chromium containing dust particles within the enclosure, where they can be removed by the required housekeeping practices. Building enclosures also reduce fugitive emissions by reducing fugitive vapors and entrained particles that escape from the enclosure instead of being captured by the add-on controls. The specific add-on controls and building enclosures required by the Proposed Amendments can vary from facility to facility based on the equipment and operations of the facility and the applicability of the requirements.

D. Best Management Practices and Housekeeping Requirements

Existing chrome plating facilities are required to meet more stringent best management practices and housekeeping requirements than the 2007 ATCM. The housekeeping requirements become effective on January 1, 2024, and the best management practices become effective on July 1, 2024. Decorative chrome plating facilities are not subject to the requirements that start on January 1, 2026, because they will be phasing out hexavalent chromium use by January 1, 2027. These new and enhanced best management practices and housekeeping requirements will reduce fugitive emissions by reducing the amount of hexavalent chromium dust and liquid that could escape the tank and grinding area and requiring the prompt and proper cleanup of any spills and dust, which can produce fugitive vapors and dust. Table III.2 below shows the differences between the best management practices and housekeeping requirements set forth in the 2007 ATCM and the Proposed Amendments.

[45] *US EPA Method 204 (January 14, 2019)*

Table III.2 Differences Between the Best Management Practices and Housekeeping Requirements Set Forth in the 2007 ATCM and the Proposed Amendments

2007 ATCM	Proposed Amendments
Facilities with automated lines: drip trays shall be placed such that the liquid is returned to the tanks.	Facilities with automated lines: install a drip tray, or other containment device between tanks to capture and return the liquid to the tanks. Clean the trays weekly such that there is no accumulation of dust or residue contaminated with hexavalent chromium.
Clean any surfaces potentially contaminated with hexavalent chromium once every seven days, using one or more of the following methods: HEPA vacuum, hand wipe with a damp cloth or wet mop, or otherwise clean as approved by the Districts, or maintain using non-toxic chemical dust suppressants.	Clean, using an approved cleaning method, surfaces within the enclosed storage area, open floor area, walkways around a Tier I, Tier II, or Tier III hexavalent chromium tank, or any surface potentially contaminated with hexavalent chromium or surfaces that potentially accumulate dust weekly. Approved cleaning method means using a wet mop, damp cloth, wet wash, low pressure spray nozzle, HEPA vacuum, or an alternative method approved by the Districts.
Separate the buffing, grinding, or polishing areas from the electroplating/anodizing operations by installing a physical barrier (e.g., plastic strip curtains)	Same material standard until January 1, 2026. Starting in 2026, conduct all buffing, grinding, and polishing operations within a building enclosure meeting specific requirements.
Store, dispose of, recover, or recycle chromium or chromium-containing wastes generated from housekeeping activities using practices that to do not lead to fugitive dust and in accordance with hazardous waste requirements.	Store, dispose of, recover, or recycle hexavalent chromium or hexavalent chromium-containing wastes generated from housekeeping activities using practices that do not lead to fugitive emissions and in accordance with hazardous waste requirements. If the wastes cannot be immediately disposed of, recovered, or recycled, store them in a closed container in an enclosed storage area.
None	Beginning January 1, 2024, use an approved cleaning method to clean floors within a 20-foot radius of any buffing, grinding, or polishing workstation(s) at the end of the day on days when buffing, grinding, or polishing are conducted.
None	Beginning July 1, 2024, do not spray rinse parts or equipment that were previously in a hexavalent chromium tank unless they are fully lowered inside a tank where the liquid is captured or unless an alternative method listed in the Proposed Amendments is implemented.
None	Beginning July 1, 2024, do not conduct compressed air cleaning or drying operations within 15 feet of any Tier II or Tier III tank unless a barrier separates the compressing air cleaning or drying operations form tanks. A tank wall may function as the barrier provided the parts being air cleaned or dried are below the lip of the tank.
None	Beginning July 1, 2024, clearly label each tank within the tank process area with the information set forth in the Proposed Amendments.

E. Add-on Control

The Proposed Amendments decrease the hexavalent chromium emission limit applicable to all chrome plating tanks at hard chrome plating and chromic acid anodizing facilities. Starting in 2026, the emission limit would be 0.00075 mg/amp-hr, reduced from the current limit of

0.0015 mg/amp-hr. This limit will reduce potential emissions by half and ensure that reductions are achieved prior to the phase out of hexavalent chromium for functional chrome platers, which does not occur until January 1, 2039. Decorative chrome plating facilities are not subject to these requirements because they will be phasing out hexavalent chromium on January 1, 2027.

The reduction in the limit is intended to ensure that all functional chrome plating facilities are using the most health protective add-on controls available. This will also protect communities by reducing hexavalent chromium emissions during the extended phase out period while alternative technology is developed for functional chrome plating.

The Proposed Amendments will require all functional chrome plating facilities to demonstrate that their add-on controls can meet the more stringent emission limit, or to upgrade their add-on controls. CARB believes that add-on controls will be needed to meet the 0.00075 mg/amp-hr emission limit proposed. HEPA filters and associated equipment that capture and remove hexavalent chromium from the air stream are an example of add-on controls that could be used to meet the emission limit. Associated equipment needed for a HEPA filter includes hardware for drawing the air through the filter and usually other pre-treatment device(s), such as a scrubber and/or mist eliminator so that hexavalent chromium emissions from plating tanks can be captured and treated effectively. Facilities may choose other add-on control options if they are able to demonstrate that they meet the emission standards set in the Proposed Amendments. Many functional chrome plating facilities will be able to meet the new emission limit with their existing add-on control equipment, while others may need to upgrade their systems or install brand new control systems to meet the emission limit.

F. Trivalent Chromium as an Alternative to Hexavalent Chromium

Trivalent chromium is safer than hexavalent chromium and has been proven as a technologically feasible alternative in decorative chrome plating. While hexavalent chromium is the most common type of chromium used in chrome plating processes, trivalent chromium has also been used for many decorative chrome plating applications for decades.

Although trivalent chromium is a safer alternative to hexavalent chromium, trivalent chromium is also a toxic air contaminant (TAC). However, unlike hexavalent chromium, trivalent chromium is not a known carcinogen. The U.S. EPA has identified chromium compounds, which includes trivalent and hexavalent chromium, as a hazardous air pollutant (HAP) under the 1990 federal Clean Air Act (CAA) Amendments. In 1993, CARB identified the 189 federal HAPs as TACs pursuant to AB 2728 (Tanner, Stats. 1992, ch. 1161).[46] OEHHA has developed noncancer reference exposure levels for trivalent chromium.[47] Based on these newly released values, trivalent chromium is a safer alternative to hexavalent chromium plating in both decorative and functional plating operations.

[46] AB 2728 (Tanner, Stats. 1992, ch. 1161)

[47] *OEHHA-2nd Draft REL for Chromium Trivalent-Technical Support Document*

Trivalent chromium technology is at various stages of development for various applications. For decorative plating operations, trivalent chromium technology is commercially available from multiple vendors and is being utilized successfully in California and throughout the world. The performance characteristics for the decorative parts plated with trivalent chromium are comparable to those plated with hexavalent chromium. However, industry has expressed concerns that trivalent chromium does not create a deposit that precisely matches the color achieved by hexavalent chromium plating. The chromium layer deposited by trivalent chromium plating is slightly darker than the layer deposited by hexavalent chromium plating.

Additional development is needed to make alternatives to hexavalent chromium available for all functional chrome plating applications. Although some replacements are commercially available, they do not yet cover all applications for hard chrome plating and chromic acid anodizing. Alternatives to hexavalent chromium in functional chrome plating, including trivalent chromium, are at various stages of development and availability. These applications include, but are not limited to, plating of hydraulic cylinders and interiors of gun barrels with trivalent chromium. These require thin, dense chrome deposits and have simple geometry. However, most aerospace and military specifications (DOD MIL-SPECs) require thickness, hardness, and corrosion resistance that cannot currently be met with trivalent chromium plating. Due to the high consequences of a failed part, these applications also have rigorous testing requirements in order to prove new technology.

Trivalent chromium chemistry is not currently under development as an alternative to replace hexavalent chromium in the context of chromic acid anodizing operations. However, other compounds have been identified as safer alternatives to hexavalent chromium in chromic acid anodizing operations. These safer alternatives are discussed below.

G. Other Alternatives to Hexavalent Chromium

Although trivalent chromium is not currently available to replace hexavalent chromium in the context of chromic acid anodizing operations, there are other compounds which have been identified as safer alternatives. Although the alternatives listed below are available for some functional chrome plating applications, there has not been an alternative that can replace hexavalent chromium for all functional chrome plating applications.

1. Tartaric Sulfuric Acid and Phosphoric Sulfuric Acid

European studies found that tartaric sulfuric acid and phosphoric sulfuric acid are viable substitutes to the chromic acid anodizing processes for certain applications.[48] Processes using tartaric sulfuric acid or phosphoric sulfuric acid instead of chromium compounds are more environmentally friendly. These processes reduce energy and wastewater costs and are in compliance with the European Union's Registration Evaluation Authorization of Chemicals

[48] *A Review on Anodizing of Aerospace Aluminum Alloys for Corrosion Protection Study*

(REACH) Regulation.[49] REACH is a regulation adopted by the European Union to improve protection of human health and the environment from the risks that can be posed by hazardous chemicals such as hexavalent chromium. It establishes procedures for collecting and assessing information on the properties and hazards of substances by using four processes: registration, evaluation, authorization, and restriction of chemicals. REACH also calls for the progressive substitution of the most dangerous chemicals when suitable alternatives have been identified.

2. Trivalent Chromium and Ionic Liquid Solution

Trion Coating LLC, in partnership with University of Notre Dame faculty researchers, developed a safer alternative to hexavalent chromium. Trion Coatings uses trivalent chromium and a proprietary ionic liquid solution that offers an excellent health and safety profile.[50] This product is an environmentally friendly chrome plating technology that can replace hexavalent chromium processes for both decorative and functional applications. The process uses trivalent chromium salt and ionic liquid chemistry, made without PFOS or other PFAS compounds, and does not contain hexavalent chromium. This new technology appears to provide a safe operating environment for chrome plating employees with low lifecycle costs and meets the standards for some commercial specifications, including for functional chrome plating applications.

H. Technology Reviews

The Proposed Amendments require CARB to complete two technology reviews by January 1, 2032, and January 1, 2036. Community representatives, environmental justice advocates, chrome plating facility owners and operators, and other industry stakeholders will be invited to participate in the technology review process. The technology reviews will identify whether any alternative, including trivalent chromium plating, will be available for some or all functional chrome plating applications in time for the 2039 phase out. It is anticipated that this process may include input from academia. The results of the technology reviews will be posted on CARB's website in form of a fact sheet or a report.

IV. The Specific Purpose and Rationale of Each Adoption, Amendment, or Repeal

Government Code section 11346.2, subdivision (b)(1) requires CARB to describe the specific purpose for each proposed amendment and a description of the rationale for CARB's determination that each proposed amendment is reasonably necessary to carry out the purpose and address the problems described in Section II. This chapter provides the specific purpose and rationale for each proposed amendment.

---

[49] *European Union's Registration Evaluation Authorization of Chemicals*

[50] Trion Coating LLC-CARB Chromium Plating Symposium March 3_2021

The full underline/strikethrough APA-compliant version of the text of the Proposed Amendments can be found in Appendix A, with additions underlined and deletions struck out.

Some of the amendments improve formatting, grammar, and punctuation and are non-substantive. These amendments will not change the meaning, understanding, or implementation of the Proposed Amendments. For example, the word "the" was added and commas and dashes were added or removed as necessary to improve grammar without changing the substantive requirement. Also, the word "section" was uncapitalized for consistency in formatting. Similarly, to improve consistency of formatting, the word "subsection" was changed to "section" if the full number for the section is spelled out (e.g., section 93102.4(a) is used instead of subsection 93102.4(a)). To improve consistency of formatting in lists, the words "and" and "or" are only included after the second to last item on the list. Extraneous uses of the word "and" and "or" earlier in the list have been removed. Further, the acronym "CFR" was changed to "Code of Federal Regulations" for consistency of formatting by spelling out references to regulations. Additionally, some provisions were moved to other areas of the Proposed Amendments to improve readability and organization.

Staff are proposing to capitalize the first letter of each word for all defined terms in the Proposed Amendments to provide clarity to the regulated community. Capitalizing defined terms throughout the Proposed Amendments alerts the regulated community as to which terms are defined such that they can cross reference the Definitions Section to understand the meaning of the term. Defined terms are not capitalized in the 2007 ATCM, so these changes are pervasive throughout the Proposed Amendments. Similarly, some terms that were capitalized in the 2007 ATCM were not defined terms. The Proposed Amendments uncapitalize these undefined terms (unless they are at the beginning of a sentence or list or are proper nouns that require capitalization) to distinguish defined terms using capitalization. The amendments that capitalize defined terms are non-substantive, and will not change the meaning, understanding, or implementation of the Proposed Amendments.

Staff are also proposing some global changes to the terminology for several defined terms to improve clarity and readability. These changes are non-substantive, and will not change the meaning, understanding, or implementation of the Proposed Amendments. The changes in terminology include:

- The shorthand "CARB" is being used instead of "California Air Resources Board."
- The shorthand "chrome plating" is used instead of "chromium electroplating" except for in the title, where the full term is spelled out. The term "chrome plating" is defined to include decorative chrome plating, hard chrome plating, and chromic acid anodizing. This improves readability by shortening the phrase "chromium electroplating or chromic acid anodizing" (which is repeated throughout the 2007 ATCM) to "chrome plating."
    - The shorthand "decorative chrome plating" is used instead of "decorative chromium electroplating."
    - The shorthand "hard chrome plating" is used instead of "hard chromium electroplating."

    - The shorthand "chrome plating bath" is used instead of "electroplating or anodizing bath." This includes baths used for decorative chrome plating, hard chrome plating, and chromic acid anodizing.
    - The shorthand "chrome plating tank" is used instead of "chromium electroplating or chromic acid anodizing tank." This includes tanks used for decorative chrome plating, hard chrome plating, and chromic acid anodizing.
    - The shorthand "chrome plating kit" is used instead of "chromium electroplating or chromic acid anodizing kits." This includes kits used for decorative chrome plating, hard chrome plating, and chromic acid anodizing.
- The term "source test" is used instead of "performance test." This improves clarity by consistently using the term "source test," which is defined by the Proposed Amendments, rather than "performance test," which is not defined.

A. § 93102. Airborne Toxic Control Measure for Chromium Electroplating and Chromic Acid Anodizing Operations

Purpose for Change of Title of Proposed Amendments

The title of the Proposed Amendments was changed to spell out the word "electroplating" instead of using the shorthand "plating," which was used in the 2007 ATCM. Further, the word "facilities" was changed to "operations."

Rationale for Change of Title of Proposed Amendments

The change from "plating" to "electroplating" was necessary because the title is intended to spell out terms fully rather than using the shorthand "plating." The word "facilities" was changed to "operations" because the Proposed Amendments apply to all chrome plating operations, not *only* chrome plating that occurs at chrome plating *facilities.* The Proposed Amendments apply to chrome plating operations even if the facility where they occur is not primarily considered a chrome plating facility, such as a steel mill that has chrome plating tanks. The Proposed Amendments also apply to any person who sells, supplies, offers for sale, uses, or manufactures for sale in California a chrome plating kit, which are available for individuals to purchase on the internet and use for chrome plating (see below for Purpose and Rationale for section 93102.1(a)).

1. § 93102 through § 93102.16

Purpose – Overview of Chrome Plating ATCM

Section 93102 explains that the Chrome Plating ATCM is contained in sections 93102 through 93102.16. Section 93102.1 specifies the applicability of the ATCM. Section 93102.2 sets forth the exemption applicable to the regulation. Section 93102.3 sets forth the definitions for terms used throughout the Proposed Amendments.

Section 93102.4 sets forth the phase out, emission limitations, alternative compliance methods, and requirements applicable to hexavalent chromium tanks. Section 93102.5 sets

forth requirements that apply to all hexavalent chromium plating facilities, including requirements regarding add-on controls, environmental compliance training, housekeeping requirements, and best management practices. Section 93102.6 contains special requirements that apply only to trivalent chromium plating facilities and facilities using enclosed hexavalent chromium electroplating tanks, including requirements regarding emission controls and emission limitations.

Most of the requirements in sections 93102.7 through 93102.14 have been in effect since 1998. Section 93102.7 sets forth the source test requirements. Section 93102.8 sets forth the specific requirements regarding chemical fume suppressants. Section 93102.9 sets forth the parameter monitoring requirements (including ampere-hours for tanks, pressure drops, surface tension, fume suppressants). Section 93102.10 sets forth the inspection and maintenance requirements. Section 93102.11 sets forth the requirements for the operation and maintenance plan. Section 93102.12 sets forth the recordkeeping requirements, and section 93102.13 sets forth the reporting requirements. Section 93102.14 sets forth the process for requesting and receiving approval to implement alternative methods of compliance. Section 93102.15 sets forth requirements that apply to the manufacture, sale, supply, offer for sale, and use of chrome plating kits in California.

There are 9 appendices to the ATCM contained in section 93102.16. Appendix 1 lists the requirements for submittals to CARB and the Districts, including the attestation requirement. Appendix 2 lists the content of source test reports required by section 93102.13(a). Appendix 3 lists the content of ongoing compliance status reports required by section 93102.13(b). Appendix 4 sets forth the smoke test used to verify the seal integrity of tank covers designed to reduce chromium emissions from chrome plating tanks. Appendix 5 contains a table listing District rules applicable to chrome plating facilities in California. Appendix 6 sets forth the calculation for the mass emission rate to be used in the alternative requirements for enclosed hexavalent chromium electroplating facilities. Appendix 7 sets forth the surface tension procedure for a stalagmometer, which is used in sections 93102.7 through 93102.10. Appendix 8 lists information to be submitted to the District when demonstrating alternative method(s) of compliance pursuant to Health and Safety Code section 39666, subdivision (f). Appendix 9 lists the thresholds applicable to Tier II and Tier III hexavalent chromium tanks, including temperatures and concentrations.

Rationale – Overview of Chrome Plating ATCM

Staff are proposing to amend the Chrome Plating ATCM (title 17, California Code of Regulations, section 93102 et seq.) to further reduce the public's exposure to emissions of hexavalent chromium. If adopted, the Proposed Amendments would reduce the cancer risk and other health impacts that result from exposure to hexavalent chromium from the chrome plating industry to zero following the 2039 phase out of hexavalent chromium from functional chrome plating facilities. Due to the high level of toxicity of hexavalent chromium, the health impacts of hexavalent chromium, the proximity of chrome plating facilities near sensitive receptors and disadvantaged communities, and following extensive evaluation of air monitoring data, a zero emission level is necessary to prevent an endangerment of public health.

The Proposed Amendments include requirements that are similar to some of the requirements in South Coast AQMD Rule 1469 (Rule 1469). Rule 1469 has reduced emissions from chrome plating facilities in South Coast AQMD, where most of the chrome plating facilities in California are located. Rule 1469 established additional housekeeping requirements, building enclosure requirements, best management practices, and new control requirements applicable to tanks, which reduce fugitive emissions of hexavalent chromium that can escape into surrounding communities. The Proposed Amendments include housekeeping requirements similar to those in Rule 1469 that are applicable to decorative and functional plating facilities to reduce fugitive emissions prior to the applicable phase out dates. CARB has included similar requirements to Rule 1469's building enclosure requirements, best management practices, and control requirements for tanks that will apply to functional chrome plating facilities prior to the 2039 phase out date. They serve to limit the exposure of communities near functional chrome plating facilities in the interim period during which alternative technology is developed to replace hexavalent chromium for functional chrome plating. The sections adapted from Rule 1469 include: section 93102.3 (numerous definitions); sections 93102.4(c) (fume suppressants and control devices); 93102.4(d) (building enclosure requirements); 93102.4(f) (emission limitations for Tier III functional chrome plating tanks) 93102.5(c) (housekeeping requirements); and 93102.5(e) (best management practices).

The necessity for each section is discussed below.

2. § 93102.1 Applicability

Purpose of Section 93102.1

Subsection (a) was only changed to capitalize defined terms and to incorporate new terminology; the substantive requirements of subsection (a) are not being amended. Subsection (1) is being amended to incorporate the shorthand "chrome plating" instead of "hard chromium electroplating, decorative chromium electroplating, or chromic acid anodizing." Because the term "chrome plating" is defined to include all of these operations, this does not substantively change the meaning of the provision. Subsection (2) is being amended to incorporate the shorthand "chrome plating kits" instead of "chromium electroplating or chromic acid anodizing kits." Because the definition of "chrome plating kits" includes kits used for chrome plating or chromic acid anodizing, this does not materially change the meaning of the provision.

Subsection (b) was changed to incorporate the new defined terminology "District" instead of "permitting authority of the district in which the major source is located."

Subsection (c) was not changed.

Rationale of Section 93102.1

Subsection 93102.1(a) establishes which entities and persons are subject to the Proposed Amendments, and CARB does not propose substantive amendments to subsection (a). The changes in terminology are incorporated to improve the clarity and readability of the Proposed Amendments.

Subsection (b) was changed to improve clarity and readability by using the defined term "District." This change improves succinctness by removing the phrase "of the district in which the major source is located" since "District" is defined as the local air pollution control or air quality management district.

3. § 93102.2 Exemption

Purpose of Section 93102.2

The Proposed Amendments remove section 93102.2(a), which removes the exemption for hexavalent chromium containing tanks that are not chrome plating tanks.

Subsection (b) was amended to remove the subsection (b) heading. Subsection (b) retains the exemption for breakdowns from the 2007 ATCM, which provides that the requirements of section 93102.4 and 93102.11 do not apply during periods of equipment breakdown, provided the provisions of the District's breakdown rule are met. It refers to the appendix that provides a table of the District rules related to breakdowns, which has been renumbered from Appendix 6 in the 2007 ATCM to Appendix 5 in the Proposed Amendments. The Proposed Amendments add the following language to subsection (b): "The burden of proving that these provisions are met and that the claimed breakdown falls under the definition of breakdown provided in section 93102.3 is placed upon the person seeking to utilize this exemption."

Rationale of Section 93102.2

Section 93102.2(a) in the 2007 ATCM exempted from the regulation tanks associated with chrome plating processes in which chrome plating did not actually take place. The Proposed Amendments remove this exemption because hexavalent chromium containing tanks that are not chrome plating tanks were found to be a potentially significant source of hexavalent chromium emissions and therefore needed to be subject to the requirements of this regulation to reduce emissions.

The label for subsection (b) was removed because it is now the only paragraph in this section, and the subsection designation was no longer needed.

The statement "the burden of proving that these provisions are met and that the claimed breakdown falls under the definition of breakdown provided in section 93102.3 is placed upon the person seeking to utilize this exemption" was moved and altered from similar language that was in the definition of "breakdown" in the

2007 ATCM. The definition of "breakdown" in the 2007 ATCM included a long sentence which said at the end "with the burden of proving the criteria of this section placed upon the person seeking to come under the provisions of this law." This sentence was moved because it is a substantive requirement applicable to the exemption and fits more properly in the exemption section than the definitions section, and moving it improves organization and readability. The sentence was changed from the phrase in the 2007 ATCM's definition of "breakdown" to improve clarity regarding the applicability of this exemption. It specifies that the provisions in the District's breakdown rule must be met, and the breakdown must satisfy the requirements in the definition of "breakdown" to qualify for this exemption. The person trying to utilize the breakdown exemption has the burden of proving that the applicable provisions in the District's breakdown rule are met and that its falls under the definition of "breakdown," which lists the factors required to qualify as a "breakdown" (see Purpose and Rationale for the definition of "breakdown").

4. § 93102.3 Definitions

Overview of Definitions Section

Purpose of Section 93102.3(a)

The purpose of section 93102.3(a) is to set forth the definitions of terms used in the Proposed Amendments. The proposed revisions modify the definitions of terms, add new terms that are used in the Proposed Amendments, and delete the definitions that are no longer necessary because the terms are not included in the Proposed Amendments.

Staff made numerous changes globally to capitalization of terms such that all defined terms are capitalized in the Proposed Amendments. As discussed above, staff are also proposing some global changes to the terminology for several defined terms to improve clarity and readability (such as saying "chrome plating" instead of "chromium electroplating or chromic acid anodizing").

Rationale of Section 93102.3(a)

The modified definitions are intended to further clarify the existing definitions and to ensure consistency with new regulatory text. The new definitions are necessary to implement amendments in the regulation, and terms no longer used in the regulation were removed as they are no longer necessary.

The amendments proposed for the various definitions are discussed in detail below.

Add-on Air Pollution Control Device

Purpose for Changes to Definition of "Add-on Air Pollution Control Device"

The definition of "add-on air pollution control device" was amended to replace the phrase "chromium electroplating and anodizing tanks" with "Tier II tank(s), Tier III tank(s), or other chromium containing tank(s)." The following sentence was added to the end: "Add-on air

pollution control devices include, but are not limited to HEPA filters, composite mesh-pad systems, and packed bed-scrubbers."

Rationale for Changes to Definition of "Add-on Air Pollution Control Device"

It is necessary to change the phrase "chromium electroplating or anodizing tank" to "Tier II tank(s) Tier III tank(s), or other chromium containing tank(s)" to provide clarity to the regulated community that the add-on air pollution control device can be installed on any tank that contains chromium, not just the chrome plating tank. The Proposed Amendments have been expanded to apply to more tanks than just chrome plating tanks because the exemption for non-chrome plating tanks that was in section 93102.2(a) of the 2007 ATCM has been removed. Add-on air pollution control devices are a potential control option for Tier II tanks and are required for Tier III tanks.

The addition of "add-on air pollution control devices include, but are not limited to HEPA filters, composite mesh-pad systems, and packed bed-scrubbers" is necessary to provide examples of what types of control systems are expected to be in operation at facilities without limiting the types that can be used effectively.

Airlock System

Purpose for Adding Definition of "Airlock System"

This provision defines "airlock system" as a transitional space that has two doors that separate a building enclosure from the exterior. The two doors must be interlocked in series to avoid being opened at the same time, and the transitional space must be ventilated with filtered supply air that is returned into the building enclosure.

Rationale for Adding Definition of "Airlock System"

The definition is necessary because airlock systems are one of the options that can be used to comply with the building enclosure requirements set forth in section 93102.4. Proper airlock systems reduce hexavalent chromium emissions that escape into the ambient air through building enclosure openings, which harms the surrounding community. It is important to have the two doors interlocked so that they cannot be open at the same time, which would allow hexavalent chromium emissions to escape to the exterior. Further, it is necessary to keep the interior space ventilated with air returned to the building enclosure to filter contaminated air from inside the building enclosure.

Ampere-Hour

Purpose for Change to Definition of "Ampere-Hour" or "Amp-Hr"

The definition was amended to add the shorthand "amp-hr" to the defined term and to remove "integral of" from the phrase "the integral of electrical current." The word "chrome" was added to the phrase "chrome plating tank."

Rationale for Change to Definition of "Ampere-Hour" or "Amp-Hr"

It was necessary to add the shorthand "amp-hr" because it is used in the Proposed Amendments. The phrase "the integral of" was removed because it was not necessary and is

not a term that is commonly understood by industry. The word "chrome" was added to the phrase "chrome plating tank" for consistency of terminology and to incorporate the defined term.

Area Source

Purpose of Change to Definition of "Area Source"

The definition was amended to remove "as defined in this part."

Rationale of Change to Definition of "Area Source"

Staff removed the phrase "as defined in this part" because it was extraneous. The term "major source" is a defined term under section 93102.3, and the use of capitalization in the definition signifies that it is a defined term. Therefore, it is not necessary to state that it is defined in this part.

Approved Cleaning Method

Purpose for Adding Definition of "Approved Cleaning Method"

This provision defines "approved cleaning method" as cleaning using: (A) a wet mop; (B) a damp cloth; (C) wet wash; (D) low pressure spray nozzle; or (E) HEPA vacuum. The District may allow for the use of an alternative cleaning method that is as effective as one of these listed methods.

Rationale for Adding Definition of "Approved Cleaning Method"

This definition is necessary because the Proposed Amendments use the term "approved cleaning method" in the housekeeping requirements set forth in section 93102.5(c)(2). Approved cleaning methods are required for the prompt cleanup of hexavalent chromium spills, weekly cleanings, and floor cleanings. This definition was added to specify what qualifies as an approved cleaning method. Staff chose to include using a wet mop, damp cloth, wet wash, low pressure spray nozzle, and HEPA vacuums because those are established techniques for cleaning that would reduce emissions of hexavalent chromium (see Section I.(M)(4)). Other cleaning methods, such as dry sweeping, are not included because they could exacerbate emissions by disturbing and entraining hexavalent chromium dust into the air, where it may escape into ambient air.

It is necessary to allow for other cleaning methods to be approved by the District because specific cleaning methods not listed in the definition may be effective and necessary for cleaning, and staff cannot create a comprehensive list that includes all possible cleaning methods. CARB is providing flexibility to the District to determine what they deem an acceptable cleaning method. The District may approve alternative cleaning methods for use in accordance with their applicable procedures.

Associated Process Tank

Purpose for Adding Definition of "Associated Process Tank"

This provision defines "associated process tank" as any tank in the process line of a Tier I, Tier II, or Tier III hexavalent chromium tank that is not a Tier I, Tier II, or Tier III hexavalent chromium tank. Associated process tanks may contain hexavalent chromium at levels below those of Tier I tanks. The term "process line" is generally understood by industry to mean all the tanks that are involved in the plating of the base material from initial cleaning to final rinsing but that do not fall under the definition of Tier I, Tier II, or Tier III tanks.

Rationale for Addition of Definition of "Associated Process Tank"

This definition is necessary because the term "associated process tanks" is used in the best management practices set forth in section 93102.5. An associated process tank is a tank that is used for supporting operations and can be any tank that is directly in the process line of the Tier I, II, or III hexavalent chromium tank but that is not a Tier I, II, or III tank itself. Hexavalent chromium plating facilities often have a series of tanks that are used as part of the hexavalent chromium plating process. The tanks perform other functions at the facility including rinsing, cleaning, degreasing, sealing, passivating, and other types of electroplating.

The Proposed Amendments include best management practices that require proper rinsing and splash guards that are intended to minimize spills of solution that might contain hexavalent chromium from these tanks. It is necessary to include the other tanks in the process line that are not Tier I, II, and III tanks to prevent fugitive emissions because liquid that contains hexavalent chromium can be released from associated process tanks.

Base Material

Purpose for Changes to the Definition of "Base Material"

This definition was amended remove the phrase "metal or metal alloy, or plastic that comprises the workpiece" and to add the phrase "part that is dipped in the chrome plating tank for the purposes of chrome plating."

Rationale for Changes to the Definition of "Base Material"

This change is necessary to clarify the definition of base material, which is used throughout the definitions section and in section 93102.5(d). The base material is the item that is dipped in the chrome plating tank to be chrome plated. The base material can be made up of any material but is typically metal or plastic. Examples include parts, such as a faucet, car bumper, or aircraft landing gear.

Barrier

Purpose for Adding Definition of "Barrier"

This provision defines "barrier" as a physical divider that can be fixed or portable (e.g., a wall, welding screen, plastic strip curtains).

Rationale for Adding Definition of "Barrier"

This definition is necessary because the term "barrier" is used in section 93102.5 of the Proposed Amendments. It was necessary to include this definition to provide clarity to the

meaning of the term "barrier" used in the housekeeping and best management practices requirements. These provisions require barriers to restrict airflow from areas that are likely to generate hexavalent chromium emissions. They act to reduce the potential hexavalent chromium emissions that escape as fugitive emissions. Specific examples of barriers are given to clarify what type of barriers CARB anticipates industry will use, but other types of barriers may be used as long as they meet the requirements in the applicable provision(s).

Bath Component

Purpose for Changes to Definition of "Bath Component"

The definition was amended to add the phrase "chemical composition or." The word "chemical" was added before "component(s)" and the "(s)" was removed. The Proposed Amendments replace the phrase "in trivalent chromium plating baths" with the phrase "in the chrome plating bath." The following sentences were removed: "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."

Rationale for Changes to Definition of "Bath Component"

These amendments were necessary to expand the definition to include the bath components used in hexavalent chromium plating in addition to trivalent chromium plating by using the defined term "chrome plating bath," which includes the electrolytic solution used in hexavalent chromium or trivalent chromium plating. This was necessary because the tank labeling requirements in section 93102.5 apply to hexavalent chromium plating bath components, so the definition needs to incorporate bath components used in hexavalent chromium plating as well as trivalent chromium plating. The 2007 ATCM defined a bath component as "the trade or brand name of each component(s) in the trivalent chromium plating process." Staff needed to clarify that the bath component is a chemical component in the bath used in the chrome plating tank, such as trivalent chromium or a wetting agent. This does not include physical components of the tank or bath, such as mixing equipment or pumps. The "(s)" was removed from "component(s)" because the (s) is extraneous due to the word "each" before "chemical component."

The Proposed Amendments add "chemical composition or" to clarify that the bath component must be identified by either the chemical composition or the trade or brand name. The sentence at the end was removed because it is not necessary for the Proposed Amendments to specify that trivalent chromium bath compositions are "proprietary in most cases." Staff recognizes that the chemical composition of the bath may be proprietary. Therefore, owners and operators may identify the chemical component using a trade or brand name instead of the chemical composition if they do not elect to disclose the chemical composition.

Breach

Purpose for Adding Definition of "Breach"

This provision defines "breach" as any opening in a building enclosure that allows air to escape to the exterior and is not a building enclosure opening.

Rationale for Adding Definition of "Breach"

This definition is necessary to clarify the requirements in sections 93102.4 and 93102.10 of the Proposed Amendments regarding repairing and inspecting breaches. The phrase "that allows air to escape to the exterior" is necessary because the purpose of these requirements is to prevent fugitive emissions from escaping through breaches in the building enclosure into the surrounding communities. Section 93102.4 of the Proposed Amendments requires breaches to be repaired promptly, and section 93102.10 requires weekly inspections of building enclosures for breaches.

A "breach" is defined as any opening in a building enclosure that allows air to escape to the exterior except for openings that fall under the definition of "building enclosure opening." The Proposed Amendments define "building enclosure opening" as any opening *designed* to be a part of a building enclosure, including doors, vents, roof openings, and windows. Windows and doors fall under the definition of "building enclosure opening" because they are there by design; whereas a hole in the wall and a broken window fall under the definition of "breach" because they are not there by design.

Breakdown

Purpose for Changes to Definition of "Breakdown"

The definition was amended to present the requirements in list format instead of paragraph format. The word "an" was deleted before "air pollution control amendments." The following phrase was removed from the end of the definition: "with the burden of proving the criteria of this section placed upon the Person seeking to come under the provisions of this law." This language was moved to section 93102.2, which sets forth the exemption applicable during periods of equipment breakdown, as discussed above.

Rationale for Changes to Definition of "Breakdown"

The amendment from paragraph form to list form was necessary to make the definition easier to read. The "an" was removed before "air pollution control equipment" because "an equipment" is not grammatically correct. The phrase regarding the burden of proof was moved to section 93102.2, which provides that the entity bears the burden of proof to demonstrate that there has been a breakdown that qualifies for the exemption (see Purpose and Rationale for Exemptions section).

Building Enclosure

Purpose for Adding Definition of "Building Enclosure"

This provision defines "building enclosure" as a permanent building or physical structure, or portion of a building, enclosed with a floor, walls, and a ceiling or roof, that is enclosed such that airflow is limited from the enclosure to the exterior. This can include the enclosed portion of the building itself or an enclosure within a building that is enclosed such that airflow is limited from the enclosure to the rest of the building. The building enclosure may

have limited building enclosure openings to allow access for people, vehicles, equipment, or parts.

Rationale for Adding Definition of "Building Enclosure"

The definition is necessary because the term "building enclosure" is used throughout the Proposed Amendments. Many of the requirements in the Proposed Amendments aim to reduce emissions of hexavalent chromium from escaping the building as emissions to the ambient air, which endangers the surrounding community. Section 93102.4(d) requires the applicable facilities to operate hexavalent chromium tanks within a building enclosure. As such, the first sentence is necessary to define a building enclosure as the enclosed portion of the building. The phrase "such that airflow is limited from the enclosure to the exterior" is necessary because the purpose of the building enclosure is to limit the escape of fugitive emissions from the enclosed area. The second sentence is necessary to clarify that an enclosure within a building can fall under this definition as long as it is enclosed such that airflow is limited from the enclosure to the rest of the building. For example, the chrome plating tanks could be situated in an enclosed room that is separated from the rest of the building by an airlock system that limits air flow to the rest of the building. Further, it is necessary to specify that the building enclosure need not be fully enclosed and can have limited openings for ingress and egress so that people, vehicles, equipment, or parts may access the enclosed space.

Building Enclosure Envelope

Purpose for Adding Definition of Building Enclosure Envelope

This provision defines "building enclosure envelope" as the walls, ceiling, and floor that make up a building enclosure.

Rationale for Adding Definition of Building Enclosure Envelope

The definition is necessary because section 93102.4's building enclosure requirements use the surface area of the building enclosure envelope as the basis for calculating the percentage of the building enclosure that is allowed to be a building enclosure opening. Building enclosures surrounding Tier II and Tier III tanks must not have openings that exceed 3.5 percent of the surface area of the building enclosure envelope. As such, it was necessary to specify what portions of the building enclosure are included in the building enclosure envelope.

Building Enclosure Opening

Purpose for Adding Definition of Building Enclosure Openings

This provision defines "building enclosure opening" as any opening designed to be part of a building enclosure, such as passages, doorways, bay doors, vents, roof openings, and windows. This term excludes openings designed to accommodate and generally conform to an exhaust stack or duct for a building enclosure.

Rationale for Adding Definition of Building Enclosure Openings

The definition is necessary because the Proposed Amendments use the term "building enclosure opening" in the definitions section and in section 93102.4, which includes specific requirements regarding building enclosure openings. Therefore, building enclosure openings need to be defined to provide clarity regarding what openings can be present in building enclosures and to differentiate these openings from openings that need to be closed.

"Building enclosure opening" is defined as an opening that is designed to be part of a building enclosure to distinguish it from openings that are not part of the building design, which are defined as breaches (e.g., a hole in the wall or a broken window). Openings that are designed to accommodate and generally conform to a stack or duct for a building enclosure are excluded from the definition of building enclosure opening because these openings will contain an exhaust stack or duct passing through them, minimizing fugitive emissions that could escape from the opening.

CARB

Purpose for Adding Definition of CARB

This provision defines "CARB" as the California Air Resources Board.

Rationale for Adding Definition of CARB

The definition is necessary because the Proposed Amendments use the abbreviation "CARB." It is necessary for clarity to define "CARB" as the California Air Resources Board.

Chrome Plating

Purpose for Adding Definition of Chrome Plating

This provision defines "chrome plating" as decorative chrome plating, hard chrome plating, and chromic acid anodizing.

Rationale for Adding Definition of Chrome Plating

The definition was added to simplify the Proposed Amendments by shortening the terminology used throughout the Proposed Amendments. In numerous places throughout the Proposed Amendments, it is necessary to refer to decorative chromium electroplating, hard chromium electroplating, and chromic acid anodizing at the same time. Adding the term "chrome plating," which includes all of three types of operations, allows for staff to simplify other definitions and provisions and improves clarity and readability. It clearly signifies to the reader that the term "chrome plating" refers to decorative and hard chrome plating and chromic anodizing operations.

Chrome Plating Bath

Purpose for Changes from Definition of "Electroplating or Anodizing Bath" to "Chrome Plating Bath"

The definition of "chrome plating bath," is the same as the definition of "electroplating or anodizing bath" from section 93102.3(a)(16) in the 2007 ATCM except for the following

changes. The term itself has been changed to "chrome plating bath" instead of "electroplating or anodizing bath," which resulted in the term being moved to retain alphabetical order. Also, the phrase "during the chrome plating process" was added to the end.

Rationale for Changes from Definition of "Electroplating or Anodizing Bath" to "Chrome Plating Bath"

The term changed from "electroplating or anodizing bath" to "chrome plating bath" to be consistent with the new terminology in the Proposed Amendments, which uses "chrome plating" instead of "electroplating or anodizing." Consistently using this terminology improves readability and clarity.

The definition had to be moved to be in alphabetical order since "chrome plating bath" comes significantly before "electroplating or anodizing bath." The term changed from "electroplating or anodizing bath" (which the 2007 ATCM defined with the other terms that start with the letter "e") to "chrome plating bath" (which the Proposed Amendments defined with the other terms that start with the letter "c"). Because the definition was moved, this change is shown in the Proposed Amendments' underline/strikethrough as having the definition fully underlined in its new location as the definition of "chrome plating bath" and is fully stricken through from its previous location in the definition of "electroplating or anodizing bath" (see below).

Chrome Plating Kits

Purpose for Adding Definition of Chrome Plating Kits

This provision defines "chrome plating kits" as a kit of materials that allows individual consumers to perform chrome plating. The kit typically includes a bath, a receptacle where the base material can be placed in the bath, and an anode.

Rationale for Adding Definition of Chrome Plating Kits

The definition is necessary because it is used in section 93102.1 (applicability) and 93102.15, which prohibits the use, sale, or manufacture for sale of chrome plating kits in California. Section 93102.15 of the 2007 ATCM included requirements relating to "chromium electroplating or chromic acid anodizing kits," but the term was not defined. Staff have included a definition to provide clarity as to the meaning of this term. Since the proposed definition uses the term "chrome plating," which the Proposed Amendments defined to include decorative and hard chrome plating and chromic acid anodizing, this refers to kits that perform any of these types of chrome plating. These kits are available to individual consumers such that they can perform chrome plating and can be purchased off the internet. The second sentence is necessary to provide clarity regarding the typical contents of a chrome plating kit.

Chrome Plating Operation

Purpose of Adding Definition of Chrome Plating Operation

This provision defines "chrome plating operation" as the process of performing chrome plating.

Rationale of Adding Definition of Chrome Plating Operation

The definition is necessary because the term "chrome plating operation" is used throughout sections 93102.4, 93102.5 and 93102.7 of the Proposed Amendments. For example, section 93102.4 sets forth requirements that apply to all facilities using hexavalent chromium for "chrome plating operations." It was necessary to define this term to provide clarity and to establish the terminology needed to succinctly set forth these requirements. Because this term uses the defined term "chrome plating," it applies to all types of chrome plating (decorative and hard chrome plating and chromic acid anodizing).

Chrome Plating Tank

Purpose of Changes to Definition of "Chrome Plating Tank"

Staff changed the defined term "chrome plating tank" from the term "chromium electroplating or chromic acid anodizing tank" used in the 2007 ATCM. The phrase "receptacle or container" was changed to "Tier III tank." The phrases "hard or decorative chromium electroplating or chromic acid anodizing" and "chromium electroplating or chromic acid anodizing" were changed to "chrome plating." The word "following" was removed.

Rationale for Changes to Definition of "Chrome Plating Tank"

The term "chrome plating tank" replaces the term "chromium electroplating or chromic acid anodizing tank" to incorporate the new shorthand terminology, which improves clarity and readability. The shorthand "chrome plating tank" is now used when referring to all tanks in which chrome plating is occurring instead of stating "chromium electroplating tank or chromic acid anodizing tank."

It is necessary to define "chrome plating tank" to mean the Tier III tank in which chrome plating occurs because there are several types of Tier III tanks, some of which are chrome plating tanks and some of which are not. The word "following" was removed because it was unnecessary.

Chromic Acid

Purpose for Changes to Definition of Chromic Acid

Staff amended the definition of chromic acid by changing the phrase "for chromium anhydride (CrO_3)" to "under which chromium trioxide (CrO_3) is sold." The following sentence was added at the end "Chromic acid, which typically is used in powder or flake form, is added to the bath to provide hexavalent chromium to the solution."

Rationale for Changes to Definition of Chromic Acid

This amendment is necessary to clarify the definition of "chromic acid." The replacement of "anhydride" with "chromium trioxide" provides clarity because chromium trioxide is the most common name for CrO_3. The addition of "under which" and "is sold" is necessary because

chromium trioxide is often sold under the label of chromic acid for the purposes of chrome plating even though chromic acid has a different chemical formula (H_2CrO_4). The sentence "Chromic acid, which typically is used in powder or flake form, is added to the bath to provide hexavalent chromium to the solution" provides clarity by describing the typical form of chromic acid added to the bath for chrome plating applications.

Chromic Acid Mist

Purpose for Adding Definition of Chromic Acid Mist

This provision defines "chromic acid mist" as fine droplets of chromic acid formed during chrome plating operations and emitted from the chrome plating tank.

Rationale for Adding Definition of Chromic Acid Mist

This definition is necessary because the term "chromic acid mist" is used in section 93102.10 and Appendix 4 of the Proposed Amendments. Because chromic acid mist contains hexavalent chromium, section 93102.10 requires facilities to ensure there is no breakthrough of chromic acid mist. It is necessary for the definition to specify what chromic acid mist is, how it is formed, and how it is emitted so that the meaning of this requirement is clear. As explained in Appendix 4, during chrome plating operations, bubbles of hydrogen and oxygen gas generated during the process rise to the surface of the tank liquid and burst. Upon bursting, tiny droplets of chromic acid mist become entrained in the air above the tank. The smoke test in Appendix 4 demonstrates whether chromic acid mists are able to escape from the tank cover.

Composite Mesh-Pad System

Purpose for Changes to Composite Mesh-Pad System

Staff amended the definition of "composite mesh-pad system" to add the shorthand "CMP" to the definition.

Rationale for Changes to Composite Mesh-Pad System

This amendment is necessary because the abbreviation "CMP" is used in sections 93102.9 and 93102.10 and needed to be added to the definition of composite mesh-pad system to define the acronym and ensure clarity regarding its use.

Continuous Passivation

Purpose for Adding Definition of Continuous Passivation

This provision defines "continuous passivation" as a functional chrome plating process by which a base material is passed continuously through an electrolytic hexavalent chromium solution as part of an automated process for the purpose of creating a chemically inert surface on the base material.

Rationale for Continuous Passivation

The definition is necessary because the term "continuous passivation" is used in section 93102.3 of the Proposed Amendments as an addition to the definition for hard

chrome electroplating. Previously, a facility performing continuous passivation was considered a decorative chromium electroplating facility. CARB's intent is to classify these facilities as hard chrome plating (which is a type of functional chrome plating). As described in the rationale below for amendments to the definition of "hard chrome plating," this allows continuous passivation operations to be subject to the same requirements as apply to functional chrome plating facilities, including the phase out of hexavalent chromium in 2039.

Daily

Purpose for Adding Definition of Daily

This provision defines "daily" as at least once every calendar day that the facility is operating.

Rationale for Adding Definition of Daily

The definition is necessary because the term "daily" is used throughout the Proposed Amendments to indicate how often requirements such as housekeeping requirements must be completed. Defining the term "daily" improves clarity and readability. For example, Table 93102.10 in the 2007 ATCM identifies requirements to be performed "1/day." The Proposed Amendments improves clarity by using the defined term "daily" instead of "1/day."

The phrase "that the facility is operating" was added because the facility need not complete the daily requirements during a day when the facility did not operate at all.

Decorative Chrome Plating

Purpose for Changes to Definition of Decorative Chrome Plating

The definition was amended to shorten the term from "decorative chromium electroplating" to "decorative chrome plating." The phrase "base metal, plastic, or undercoating material" and the word "part(s)" were replaced with the defined term "base material."

Rationale for Changes to Definition of Decorative Chrome Plating

The term was changed to "decorative chrome plating" to incorporate new shorthand terminology that improves readability of the Proposed Amendments. The phrase "base metal, plastic, or undercoating material" was replaced with "base material" to align this definition with the definition of "base material," which includes any material type. This improves the clarity of the regulation while retaining the intended meaning of this definition. The word "part(s)" was changed to "base material" to improve clarity by using the defined term.

District

Purpose for Changing the Term "Permitting Agency" to "District"

Staff changed the defined term "permitting agency," which was used in section 93102.3(a)(43) of the 2007, to the term "District" in the Proposed Amendments. The definition of "District" matches the definition for "permitting agency" in section 93102.3(a)(43) of the 2007 ATCM, which is defined as the local air pollution control or air

quality management district. There were no changes to the definition other than changing the term itself.

Rationale for Changing the Term "Permitting Agency" to "District"

The amendment was necessary because the term "District" has replaced the term "permitting agency" throughout the Proposed Amendments. The term "District" is preferable to "permitting agency" because it is the commonly used word to refer to the local air quality management and air pollution control districts. Further, the term "District" improves clarity because facilities may obtain permits from numerous "permitting agencies" that may or may not be their local air quality management or air pollution control district. The terms "permitting agency" and "District" were used interchangeably throughout the 2007 ATCM. To improve consistency and clarity, the term "permitting agency" has been removed from the Proposed Amendments and replaced with "District."

Electroplating or Anodizing Bath

The term "electroplating or anodizing bath" has been changed to "chrome plating bath" (see Purpose and Rationale for definition of "chrome plating bath" above).

Emission Limitation

Purpose for Changes to Definition of Emission Limitation

Staff amended the definition of emission limitation to change the format to a list instead of using paragraph format. In subsection (B), staff removed "or anodizing" and changed "chromium electroplating or anodizing tank" to the defined shortened term "chrome plating tank." Staff also added "hexavalent" before "chromium."

Rationale for Changes to Definition of "Emission Limitation"

These amendments are necessary to clarify the definition and improve its readability. Presenting the definition as a list improves readability by demonstrating which limitations apply to trivalent chromium plating and which apply to hexavalent chromium plating in their own subsections. The removal of "or anodizing" is necessary because the new shorthand terminology defines "hexavalent chromium plating" as including anodizing operations. Consistent use of the new defined term "hexavalent chromium plating" improves consistency and readability. The addition of the word "hexavalent" improves clarity because the concentration should only reflect the amount of hexavalent chromium and not other types of chromium.

Enclosed Hexavalent Chromium Plating Tank

Purpose for Changes to Definition of "Enclosed Hexavalent Chromium Plating Tank"

The definition of "enclosed hexavalent chromium plating tank" was changed to incorporate the shorthand "plating" instead of "electroplating," as well as the defined term "chrome plating tank" instead of "hard, decorative chromium electroplating or chromic acid anodizing tank." The phrase describing the required ventilation has been changed from "at half the rate or less than that of a ventilated open surface tank of the same surface area" to "as specified by the manufacturer."

Rationale for Changes to Definition of "Enclosed Hexavalent Chromium Plating Tank"

The definition was amended to incorporate the new terminology, which improves clarity and readability. The statement "as specified by the manufacturer" replaced "at half the rate or less than that of a ventilated open surface tank of the same surface area" because the manufacturer of the tank enclosure should specify the proper ventilation rate.

Enforceable

Purpose for Adding Definition of "Enforceable"

This provision defines "enforceable" as emission reductions that are real, quantifiable, and verifiable such that CARB or the District has authority to hold a particular party or parties liable and to take enforcement action if the emission reductions claimed are not achieved.

Rationale for Adding Definition of "Enforceable"

This provision is necessary to define the term "enforceable," which is used in section 93102.14 of the Proposed Regulation. In order to use an alternative method pursuant to section 93102.14 and Health and Safety Code section 39666, subdivision (f), the owner or operator must submit a request demonstrating that the alternative proposed is enforceable and will achieve equal or greater reductions in risk (see below for Purpose and Rationale for section 93102.14). This definition is necessary to clarify how the District will determine whether a request demonstrates that the alternative method will achieve enforceable emission reductions equal or greater to the reductions that would be achieved by the requirement the method proposes to replace. In order to be enforceable, the emission reductions that the request claims will be achieved by the alternative method of compliance must be real, quantifiable, and verifiable such that CARB or the District has the authority to hold a particular party liable and take enforcement action if the emission reductions claimed are not achieved (see Purpose and Rationale for definitions of "real," "quantifiable," and "verifiable").

Executive Officer

Purpose for Changes to Definition of "Executive Officer"

The definition was amended to add "California" before "Air Resources Board."

Rationale for Changes to Definition of "Executive Officer"

The amendment was necessary because the proper term for "Air Resources Board" is now "California Air Resources Board."

Existing Facility

Purpose for Changes to Definition of "Existing Facility"

The definition was amended to replace the date "October 24, 2007" with "January 1, 2024."

Rationale for Changes to Definition of "Existing Facility"

The amendment was necessary because the date of October 24, 2007, has passed and needed to be updated to include facilities that have started operation after this date and before the effective date of the Proposed Amendments.

Exterior

Purpose for Adding Definition of "Exterior"

This provision defines "exterior" as any area outside of the building enclosure.

Rationale for Adding Definition of "Exterior"

The definition is necessary because the Proposed Amendments use the term "exterior" in the definitions and throughout the building enclosure requirements in section 93102.4. For example, the definition of airlock system uses the term "exterior" to refer to the area that is being separated from the building enclosure. It is necessary to define the term "exterior" to clearly designate it as any area that is not inside the building enclosure so that the Proposed Amendments can limit the fugitive emissions that have the potential to escape from the enclosure to the exterior. It is necessary to define it as the area outside of the building enclosure because a building enclosure can sometimes be an enclosed space inside of a building (such as a room connected to the rest of the building through an airlock system), so escaping from the enclosure does not always mean escaping directly into the outdoors.

Facility

Purpose for Changes to Definition "Facility"

The definition was amended to incorporate the new terminology by using "chrome plating" instead of "chromium electroplating or chromic acid anodizing." It added an "'s" after "District" and added the word "jurisdiction."

Rationale for Changes to Definition of "Facility"

The amendment was necessary to incorporate new terminology defined in the definitions section. The addition of the "'s" and "jurisdiction" is necessary since the key is whether the emitting activities are located within the District's jurisdiction.

Fugitive Emissions

Purpose of Adding Definition of "Fugitive Emissions"

This provision defines "fugitive emissions" as any emissions of hexavalent chromium that escape to the atmosphere through windows, doors, vents, or other openings, but not through an add-on air pollution control device, including fugitive dust.

Rationale for Adding Definition of "Fugitive Emissions"

The definition is necessary because the term "fugitive emissions" is used in sections 93102.4 and 93102.5 of the Proposed Amendments. For example, in the case of a breach of the building enclosure, temporary measures must be taken to prevent the release of fugitive

emissions while the breach is repaired. Also, the housekeeping requirements are intended to prevent fugitive emissions from escaping into surrounding communities. Thus, it is necessary to clarify that fugitive emission are emissions of hexavalent chromium that escape the facility without first passing through a control device. Emissions that pass through an add-on air pollution control device but are not captured by the device are not fugitive emissions. Fugitive dust is included because fugitive dust is a type of fugitive emission.

Functional Chrome Plating

Purpose of Adding Definition of "Functional Chrome Plating"

This provision defines "functional chrome plating" as hard chrome plating and chromic acid anodizing.

Rationale of Adding Definition of "Functional Chrome Plating"

This definition was necessary because staff needed a simple term that could be used to refer to both hard chrome plating and chromic acid anodizing. Hard chrome plating and chromic acid anodizing are the two types of functional chrome plating. Having a term that was used for both these processes simplifies the terminology in the Proposed Amendments, as there are numerous requirements that only apply to hard chrome plating or chromic acid anodizing facilities. This term is used consistently in the Proposed Amendments instead of the term "hard chromium electroplating or chromic acid anodizing" and other similar phrases that were used throughout the 2007 ATCM to improve consistency, clarity, and readability.

Hard Chrome Plating

Purpose for Changes to "Hard Chrome Plating"

The definition to incorporate change the term "hard chromium electroplating or industrial chromium electroplating" in the 2007 ATCM to "hard chrome plating." The following sentence was added to the end: "This definition also includes continuous passivation."

Rationale for Changes to "Hard Chrome Plating"

These amendments are necessary to incorporate the new terminology "hard chrome plating," which improves clarity, consistency, and readability. Continuous passivation has been added as a specific hard chrome plating process that is intended to have the same requirements as typical hard chrome plating processes and therefore needed be included as part of the hard chrome plating definition.

Hexavalent Chromium Containing Tank

Purpose for Adding Definition of "Hexavalent Chromium Containing Tank"

This provision defines "hexavalent chromium containing tank" as a Tier I, Tier II, or Tier III tank.

Rationale for Adding Definition of "Hexavalent Chromium Containing Tank"

The definition is necessary because the term "hexavalent chromium containing tank" is used in sections 93102.3–93102.6 of the Proposed Amendments. It is necessary to define the term

so it is understood that the term "hexavalent chromium containing tank" is referring to any of the Tier I, II, or III tanks that are subject to this regulation. The definitions of Tier I, Tier II, and Tier III tanks specify that they contain hexavalent chromium (see below for Purpose and Rationale for definitions of Tiers of tanks).

HEPA Vacuum

Purpose for Adding Definition of "HEPA Vacuum"

This provision defines "HEPA vacuum" as a vacuum that is both designed for the use of and fitted with a HEPA filter.

Rationale for Adding Definition of "HEPA Vacuum"

The definition is necessary because the term "HEPA vacuum" is an approved cleaning method as defined in section 93102.3 and is included in the housekeeping requirements in section 93102.5 of the Proposed Amendments. It important to specify that the vacuum is designed for the use of and is fitted with a HEPA filter so that it can properly filter the air.

Hourly

Purpose for Adding Definition of "Hourly"

This provision defines "hourly" as at least once every hour the facility is operating.

Rationale for Adding Definition of "Hourly"

The definition was added because the term "hourly" is used in sections 93102.9 and 93102.12 of the Proposed Amendments, and it is necessary to define the frequency for measurements that must be taken hourly.

Initial Startup

Purpose for Changes to Definition of "Initial Start-Up"

The definition was amended to change the term from "initial startup" to "initial start-up." "Chromium plating or anodizing tank" was replaced with "chrome plating tank." The following sentence was removed: "If such production or operation occurs prior to October 24, 2007, the date of initial startup is October 24, 2007." The quotation marks around "initial startup"

Rationale for Changes to Definition of "Initial Start-Up"

The dash in "start-up" was added to improve grammar. The removal of the sentence was necessary because the October 27, 2007, date it is no longer necessary since it is now moot. The replacement of the term "chromium electroplating and chromic acid anodizing" with "chrome plating" follows convention for the change in terminology for the Proposed Amendments (see above).

Large, Hard Chromium Electroplating Facility

Purpose for Removal of "Large, Hard Chromium Electroplating Facility"

The definition was removed from the Proposed Amendments.

Rationale for Removal of "Large, Hard Chromium Electroplating Facility"

The definition was removed because the term "large, hard chromium electroplating facility" is no longer used in the Proposed Amendments.

Leak

Purpose for Changes to Definition of "Leak"

The definition was amended to replace the phrase: "emission collection system prior to exiting the emission control device" with the following language: "tank or the piping or ductwork associated with the tank or any component associated with the add-on air pollution control device."

Rationale for Changes to Definition of "Leak"

The addition of "tank, or the piping, or ductwork associated with the tank or any component associated with the add-on air pollution control device" is necessary to encapsulate the various sources of leaks. The term "leak" is intended to include releases from the tank or the piping or ductwork associated with the tank as well as any component associated with the add-on control device. The transition to the use of the term "add-on air pollution control device" is necessary to improve clarity and consistency because it is the defined term that captures the meaning of "emission control device."

Low Pressure Spray Nozzle

Purpose for Adding Definition of "Low Pressure Spray Nozzle"

This provision defines "low pressure spray nozzle" as a water spray nozzle capable of regulating water pressure such that it does not exceed 35 pounds per square inch.

Rationale for Adding Definition of "Low Pressure Spray Nozzle"

The definition was necessary because the term "low pressure spray nozzle" is one of the approved cleaning methods used in sections 93102.3 and is included in the best management practices in section 93102.5 of the Proposed Amendments. The pressure limit of 35 pounds per square inch is necessary because excessive pressure in the spray nozzle could result in dispersal of fugitive dust.

Maximum Cumulative Potential Rectifier Capacity

Purpose for Removal of "Maximum Cumulative Potential Rectifier Capacity"

The definition was removed from the Proposed Amendments.

Rationale for Removal of "Maximum Cumulative Potential Rectifier Capacity"

The definition was removed because the Proposed Amendments no longer use this term.

Medium, Hard Chromium Electroplating Facility

Purpose for Removal of "Medium, Hard Chromium Electroplating Facility"

The definition was removed from the Proposed Amendments.

Rationale for Removal of "Medium, Hard Chromium Electroplating Facility"

The definition was removed because the Proposed Amendments no longer use this term.

Modification

Purpose for Changes to Definition of "Modification"

The definition was amended to change the phrase "a permit to construct" to "an authority to construct" and to change "chromium plating or anodizing tank" to the new terminology "chrome plating tank."

Rationale for Changes to the Definition of "Modification"

These two term changes do not impact the meaning or intent of the definition. The phrase "an authority to construct" replaces "a permit to construct" to be consistent with the language used by the District for the applicable permit. "Chrome plating" replaces "chromium electroplating or chromic acid anodizing" for consistency with the new terminology in the Proposed Amendments.

Modified Facility

Purpose for Changes to the Definition of "Modified Facility"

The definition was amended to add the following language to the end: "on or after January 1, 2024."

Rationale for Changes to the Definition of "Modified Facility"

The amendment was necessary because the term "modified facility" is used throughout the Proposed Amendments and an applicability date was needed. This date makes sure that any facility that undergoes a modification after the effective date of the Proposed Amendments will be considered a modified facility by the Proposed Amendments.

Monthly

Purpose for Adding Definition of Monthly

This provision defines "monthly" as at least once every calendar month that the Facility is operating.

Rationale for Adding Definition of Monthly

The definition is necessary to specify that the monthly requirements in section 93102.12 of the Proposed Amendments must be done once per month. This improves clarity and readability of the Proposed Amendments. For example, Table 93102.10 in the 2007 ATCM identifies requirements to be performed "1/month." The Proposed Amendments improves clarity by using the defined term "monthly" instead of "1/month." The phrase "that the

facility is operating" was added because the facility need not complete the monthly requirements during a month when the facility did not operate at all.

New Facility

Purpose for Changes to the Definition of "New Facility"

The definition was amended to replace the "October 24, 2007" date with the new date of "January 1, 2024." One change was made to incorporate the new terminology "chrome plating tank" instead of "chromium plating or anodizing tank."

Rationale for Changes to the Definition of "New Facility"

The amendment was necessary because this term defines what is considered a "new facility" and therefore needs to be defined as any facility that starts operation after January 1, 2024 (the anticipated effective date of the Proposed Amendments) rather than the long past date of October 24, 2007. The term "chrome plating tank" replaced "chromium plating or anodizing tank" to maintain consistency with the new terminology in the Proposed Amendments (see above).

Operating Parameter Value

Purpose for Removal of "Operating Parameter Value"

The definition was removed from the Proposed Amendments.

Rationale for "Operating Parameter Value"

The term "operating parameter value" did not need to be defined because this term is commonly understood by industry as the value of an operating parameter of equipment.

Operating Day

Purpose for Adding Definition of "Operating Day"

This provision defines "operating day" as any day during which chrome plating operations take place at a facility.

Rationale for Adding Definition of "Operating Day"

The definition was necessary because the term "operating day" is used in sections 93102.9 and 93102.10 of the Proposed Amendments. For example, section 93102.9 requires surface tension to be measured daily for 20 operating days. Staff used this definition because the facility need not measure surface tension on days when chrome plating operations do not take place.

Owner or Operator

Purpose for Changes to Definition of "Owner or Operator"

The definition was amended to remove the following language: "performing hard chromium electroplating, decorative chromium electroplating, or chromic acid anodizing."

Rationale for Owner or Operator

The amendment was made because the term "owner or operator" is defined as "a person who is the owner or operator of a facility," and "facility" is defined as a source "at which chrome plating is performed." "Chrome plating" is now defined to include "hard chrome plating, decorative chrome plating, or chromic acid anodizing," so the use of the term "facility" in the definition specifies that the facility is performing any of the three types of chrome plating. Thus, the deleted phrase is redundant and has been removed.

Packed-Bed Scrubber

Purpose of Changes to Definition of Packed Bed Scrubber

The definition was amended to add the acronym "PBS" to the defined term.

Rationale of Changes to Definition of Packed Bed Scrubber

The amendment is necessary because the abbreviation "PBS" is used in sections 93102.9 and 93102.10 of the Proposed Amendments. As such, it necessary to add the abbreviation "PBS" to the term "packed-bed scrubber."

Permitting Agency

Purpose for Removing Definition of "Permitting Agency"

This definition was removed from the Proposed Amendments and replaced with the definition of "District" (see above).

Rationale for Removing Definition of "Permitting Agency"

The definition has been replaced by the term "District" in the Proposed Amendments, which has the same definition as "permitting agency" had in the 2007 ATCM. The word "District" is more succinct and clearer because it is consistent with the terminology commonly used to refer to the local air quality management or air pollution control district.

PFAS

Purpose for Adding Definition of "PFAS"

The definition was added to define the term "PFAS." The definition reads: "'PFAS' means per and polyfluoroalkyl substances."

Rationale for Adding Definition of "PFAS"

The definition is necessary because the term "PFAS" is used in section 93102.8 of the Proposed Amendments. PFAS is a technical term referring to a specific chemical group. These compounds are used to make fluoropolymer coatings and products that resist heat, oil, stains, grease, and water. They are used in chemical fume suppressants in the chrome plating industry. PFAS compounds are a concern because they do not break down in the environment, bioaccumulate in fish and wildlife, and have adverse impacts on human health.

PFAS Compound

Purpose for Adding Definition of "PFAS Compound"

This provision defines "PFAS" as a compound that contains any PFAS.

Rationale for Adding Definition of "PFAS Compound"

The definition is necessary because the term "PFAS compound" is used in section 93102.8 of the Proposed Amendments. PFAS compound refers to any compounds containing a chemical from the broad family of PFAS. PFAS compounds are a concern because they do not break down in the environment, bioaccumulate in fish and wildlife, and have adverse impacts on human health.

Polyballs

Purpose for Adding Definition of "Polyballs"

This provision defines "polyballs" as a mechanical fume suppressant that uses a layer of balls made of plastic or other material to cover a hexavalent chromium containing tank to reduce the emission of fumes.

Rationale for Adding Definition of "Polyballs"

The definition is necessary because the term "polyballs" is used in the definition of "mechanical fume suppressant" in section 93102.3 and in the table in section 93102.6. Polyballs are a type of mechanical fume suppressant that use a layer of balls, typically made of plastic, to control the emission of fumes by limiting the surface area of the tank that is exposed.

Protected Opening Method

Propose for Adding Definition of "Protected Opening Method"

This provision defines "protected opening method" as any of the following methods used to restrict air from escaping the building enclosure: (A) door that automatically closes; (B) overlapping plastic strip curtain that cover the entire opening; (C) vestibule; or (D) airlock system. The District may allow for the use of an alternative method that limits air flow to the same extent as would be limited from one of the mechanisms listed in subsections (A)–(D).

Rationale for Adding Definition of "Protected Opening Method"

The definition is necessary because the term "protected opening method" is used in section 93102.4 of the Proposed Amendments. For example, the building enclosure requirements provide that building enclosure openings that directly face schools or sensitive receptors must be equipped with a protected opening method. These requirements are in place to limit the airflow through a building enclosure to prevent the escape of fugitive emissions through building enclosure openings. The prescribed mechanisms in

subsections (A)–(D) reduce the airflow from the building enclosure to the exterior to limit the release of fugitive emissions into surrounding communities.

The District has discretion to allow the use of an alternative method if the alternative limits air flow to the same extent as one of the prescribed mechanisms. This discretion is necessary because CARB cannot compile an exhaustive list of possible protected opening methods that could reduce airflow from the enclosure and needs to allow for site specific conditions to be assessed by the District. The District may approve alternative methods for use in accordance with their applicable procedures.

Quantifiable

Purpose for Adding Definition of "Quantifiable"

This provision defines "quantifiable" as reductions in emissions that can be accurately measured and calculated, in a reliable and replicable manner using a methodology specified by CARB or the District to be applicable.

Rationale for Adding Definition of "Quantifiable"

This provision is necessary to define the term "quantifiable emission reduction," which is used in the definition of "enforceable." If an owner or operator proposes to use an alternative compliance method pursuant to section 93102.14, their request must show that the alternative method will achieve equal or greater reductions of emissions as the requirement(s) they propose to replace and provide documentation demonstrating that these reductions are enforceable. To be enforceable, the emissions reductions must be quantifiable (see Purpose and Rationale for definition of "enforceable"). Therefore, it is important the regulated community understands what "quantifiable" means. It is necessary to ensure that the reductions to be achieved by an alternative method of compliance are quantifiable and can be accurately measured and calculated in a reliable and replicable manner so that CARB or the District can determine whether the request achieves the required reductions and revoke the request if the required reductions are not achieved. CARB and the District need to maintain some flexibility to specify the applicable quantification methodologies because staff cannot anticipate the various alternative compliance methods that may be proposed.

Quarterly

Purpose for Adding Definition of "Quarterly"

This provision defines "quarterly" as once per calendar quarter. Calendar quarters are January through March, April through June, July through September, and October through December.

Rationale for Quarterly

The definition is necessary because the term "quarterly" is used to specify the required frequency for the quarterly inspection and maintenance requirements in Table 93102.10 of

the Proposed Amendments. Table 93102.10 in the 2007 ATCM identifies requirements to be performed "1/quarter." The Proposed Amendments improves clarity and readability by using the defined term "quarterly" instead of "1/quarter."

Real

Purpose for Adding Definition of "Real"

This provision defines "real" as reductions in emissions resulting from a demonstrable action or set of actions.

Rationale for Adding Definition of "Real"

This provision is necessary to define the term "real," which is used in the definition of "enforceable." If an owner or operator proposes to use an alternative compliance method pursuant to section 93102.14, their request must show that the alternative method will achieve equal or greater reductions of emissions as the requirement(s) they propose to replace and provide documentation demonstrating that these reductions are enforceable. To be enforceable, the emissions reductions must be real. Therefore, it is important the regulated community understands what "real" means. It is necessary to ensure that the reductions to be achieved by an alternative method of compliance are the result of demonstrable action(s) to ensure that the reductions achieved will be enforceable (see Purpose and Rationale for definition of "enforceable").

Responsible Official

Purpose for Changes to Definition of "Responsible Official"

The definition was amended to change the term "Administrator" to "District."

Rationale for Changes to Definition of "Responsible Official"

The amendment was necessary because the term "Administrator" is not a defined term. The Proposed Amendments replaces "Administrator" with the defined term "District," which provides clarity. The District is best suited to approve the delegation of a responsible official.

School

Purpose for Adding the Definition of "School"

This provision defines "school" as any public or private school for kindergarten through grade 12 or school readiness program used by more than 12 children, including any building or structure, playground, athletic field, or other area of the property. A school includes juvenile detention facilities with classrooms and learning and development programs funded by the U.S. Department of Education or state or local government, including pre-schools, Early Head Start, Head Start, First Five, and Child Development Centers.

Rationale for Adding the Definition of "School"

The definition was necessary because the term "school" is used in several of the definitions included in section 93102.3 of the Proposed Amendments. For example, the defined term "school" is included in the definition of "sensitive receptors," and the applicable emission

limits in Table 93102.4 depends on proximity of a source to a sensitive receptor. The definition sets forth a broadly inclusive definition of schools that includes early education facilities as well as K-12 facilities. By broadly defining "school," the Proposed Amendments protect school children by placing limitations intended to reduce emissions of hexavalent chromium from the numerous chrome plating facilities located near schools in California. Any school that serves any subset of grades K-12 is covered by this definition, for example a middle school serving only seventh and eighth grades is included.

School Under Construction

Purpose for Removal of Definition of "School Under Construction"

The Proposed Amendments remove the definition of "school under construction" that was provided in the 2007 ATCM.

Rationale for Removal of Definition of "School Under Construction"

The definition was removed because this term is not used in the Proposed Amendments.

Sensitive Receptor

Purpose of Changes to Definition of "Sensitive Receptor"

The definition was amended to remove the following language: "preschools and kindergarten through grade twelve (k-12)."

Rationale of Changes to Definition of "Sensitive Receptor"

The amendment was necessary because the phrase "preschools and kindergarten through grade twelve (k-12)" is included in the definition of the term "school," which is included in the definition of "sensitive receptor." As such, the phrase above is redundant.

Site-Specific Risk Analysis

Purpose for Adding Definition of "Site-Specific Risk Analysis"

This provision defines "site-specific risk analysis" as a health risk assessment specific to a chrome plating operation which presents the potential carcinogenic and noncarcinogenic health impacts to individuals and populations according to the District's procedures.

Rationale for Adding Definition of "Site-Specific Risk Analysis"

The definition is necessary because the term "site-specific risk analysis" is used in Table 93102.4 of the Proposed Amendments. Table 93102.4 includes a requirement that, when annual emissions exceed 15 grams, a site-specific risk analysis must be conducted in accordance with the District's procedures. The definition clarifies that facilities that must conduct a site-specific risk analysis must perform a health risk assessment on their chrome plating operations. It is necessary that this assessment present the potential carcinogenic and noncarcinogenic health impacts to individual receptors and population wide impacts so that the various health impacts can be evaluated. The definition also recognizes that different Districts have differing procedures in place for performing a site-specific risk analysis and requires that the facility follow the procedure specific to their District.

Small, Hard Chromium Electroplating Facility

Purpose for Removing Definition of "Small, Hard Chromium Electroplating Facility"

The definition was removed from the Proposed Amendments.

Rationale for Removing Definition of "Small, Hard Chromium Electroplating Facility"

The definition was removed because the term "small, hard chromium electroplating facility" is no longer used in the Proposed Amendments.

Source

Purpose for Changes to Definition of "Source"

The definition of the term "source" was amended to remove the word "associated."

Rationale for Changes to Definition of "Source"

The word "associated" was removed because it is not necessary.

Source Test

Purpose for Adding Definition of "Source Test"

This provision defines "source test" as an emissions test of chromium containing tank(s) conducted for the purpose of demonstrating compliance with an applicable emission limit in accordance with the requirements of section 93102.7.

Rationale for Adding Definition of "Source Test"

The definition was necessary because the term "source test" is used throughout the Proposed Amendments. It is necessary to define a source test as an emission test of chromium containing tanks because these are the tanks that the Proposed Amendments regulates. The test is intended to demonstrate compliance with an emission limitation set by the Proposed Amendments. The definition cites section 93102.7, which includes the requirements for source tests.

Substantial Use

Purpose for Removing Definition of "Substantial Use"

The definition was removed from the Proposed Amendments.

Rationale for Removing Definition of "Substantial Use"

The definition was removed because the term is no longer used in the Proposed Amendments.

Tank

Purpose for Changes to Definition of "Tank"

The definition was amended to replace "electroplating or anodizing bath" with "chrome plating bath or other liquid solution used in a Tier I tank, Tier II tank, Tier III tank, or associated process tank."

Rationale for Changes to Definition of "Tank"

This amendment was necessary because the term "tank" is used broadly in the Proposed Amendments to include chrome plating tanks and other tanks that are not chrome plating tanks. Chrome plating tanks are one type of Tier III tank. Chrome plating facilities use other tanks in addition to chrome plating tanks, including rinse tanks, dichromate seal tanks, and chromate conversion coating tanks. It was necessary to expand the definition of "tank" to include Tier I tanks, Tier II tanks, Tier III tanks, or associated process tanks so that there is a term that encapsulates the various types of tanks used at chrome plating facilities.

Tank Process Area

Purpose for Adding Definition of "Tank Process Area"

This provision defines "tank process area" as the area in the facility within 15 feet of any Tier I, Tier II, or Tier III hexavalent chromium tank(s), or to the nearest wall of a building enclosure, whichever is closer.

Rationale for Adding Definition of "Tank Process Area"

The definition was necessary because the term "tank process area" is used in section 93102.5 of the Proposed Amendments. This term refers to the area within 15 feet of the hexavalent chromium containing tanks. The housekeeping requirements in section 93102.5 require weekly cleaning of floors in the tank process area to reduce dust and liquid that can accumulate on the floors around the hexavalent chromium tanks. It was necessary to specify the distance around the tanks that is considered the "tank process area" because the building enclosure may be significantly bigger than the area where the hexavalent chromium containing tanks are located and floors located further than 15 feet from hexavalent chromium tanks are less likely to be contaminated with hexavalent chromium.

The phrase "or to the nearest wall of a building enclosure, whichever is closer" is necessary to exclude from the definition of "tank process area" any areas that are on the other side of a building enclosure wall from the tank. Therefore, if a wall of the building enclosure is closer than 15-feet from the tank, the area outside of the wall is excluded from the definition of "tank process area." For example, if a tank is located five feet from the wall of the building enclosure, the area that is outside of the wall of the building enclosure and on the opposite side of the wall from the tank would not be included in the definition of "tank process area" and would not need to be cleaned as required by section 93102.5(c)(4)(B).

Tier I Hexavalent Chromium Containing Tank

Purpose for Adding Definition of "Tier I Hexavalent Chromium Containing Tank"

This provision defines "Tier I hexavalent chromium containing tank" or "Tier I tank" as a tank containing a hexavalent chromium concentration of 1,000 parts per million (ppm) or greater and that is not a Tier II or Tier III hexavalent chromium tank.

Rationale for Adding Definition of "Tier I Hexavalent Chromium Containing Tank"

The definition was necessary because the terms "Tier I hexavalent chromium containing tank" and "Tier I tank" are used throughout the Proposed Amendments. For example, section 93102.4 requires Tier I tanks to be operated inside a building enclosure at functional chrome plating facilities. The ppm limit was set at 1,000 ppm because tanks permitted to contain less than 1000 ppm are not expected to be a significant source of hexavalent chromium emissions. The definition excludes Tier II and Tier III because Tier II and Tier III tanks have higher potential hexavalent chromium emissions due to their elevated operating temperature and hexavalent chromium concentrations. Tier I tanks operate at a temperature and hexavalent chromium concentration below the threshold of a Tier II or Tier III tank and are not air sparged or electrolytic.

Tier II Hexavalent Chromium Containing Tank

Purpose for Adding Definition of "Tier II Hexavalent Chromium Containing Tank"

This provision defines "Tier II hexavalent chromium tank" or "Tier II tank" as a tank that is operated within the range of temperatures and corresponding hexavalent chromium concentrations specified in Appendix 9 and that is not a Tier III hexavalent chromium tank.

Rationale for Adding Definition of "Tier II Hexavalent Chromium Containing Tank"

The definition was necessary because the terms "Tier II hexavalent chromium containing tank" and "Tier II tank" are used throughout the Proposed Amendments. Tier II tanks have the potential to emit significant levels of hexavalent chromium. Tier II tanks have more stringent building enclosure requirements than Tier I tanks because they have a higher potential to emit hexavalent chromium and must be operated in a manner that prevents these emissions from leaving the building enclosure. However, they are not required to operate with an add-on air pollution control devices like Tier III tanks (unless they elect to comply with the requirements applicable to Tier III tanks pursuant to section 93102.4(g)(2)) because they have a lower potential to emit than Tier III tanks. The exact conditions that define a Tier II tank are presented in Appendix 9 of the Proposed Amendments.

Tier III Hexavalent Chromium Containing Tank

Purpose for Adding Definition of "Tier III Hexavalent Chromium Containing Tank"

This provision defines "Tier III hexavalent chromium containing tank" or "Tier III tank" as a tank that: (A) is operated by the District within the range of temperatures and corresponding hexavalent chromium concentrations specified in Appendix 9; (B) contains a hexavalent chromium concentration greater than 1,000 ppm, and uses air sparging as an agitation method or is electrolytic; or (C) is a chrome plating tank that contains hexavalent chromium.

Rationale for Adding Definition of "Tier III Hexavalent Chromium Containing Tank"

The definition was necessary because the terms "Tier III hexavalent chromium containing tank" and "Tier III tank" are used throughout the Proposed Amendments. Tier III tanks have the highest potential emissions of hexavalent chromium due to the higher concentrations of hexavalent chromium and higher operating temperatures. These also have the most stringent controls, including the requirements for add-on air pollution control devices and source testing. The exact conditions that define a Tier III tank are specified in Appendix 9 of the Proposed Amendments.

Trivalent Chromium Plating

Purpose for Changes to Definition of "Trivalent Chromium Plating"

The definition was amended to change the term from "trivalent chromium process" to "trivalent chromium plating." The word "thin" was removed from the definition, and the phrase "chromic acid solution" was changed to "hexavalent chromium solution."

Rationale for Changes to Definition of "Trivalent Chromium Plating"

The amendment was necessary because using the term "trivalent chromium plating" fits better in the provisions that use this term and is consistent with the terminology used throughout the Proposed Amendments. For example, section 93102.13 requires the submittal of a report including a list of the bath components "that comprise the trivalent chromium plating bath," which makes more sense than the phrase "that comprise the trivalent chromium process bath." The Proposed Amendments changed "chromic acid solution" to "hexavalent chromium" because chromic acid is only one type of hexavalent chromium for which trivalent chromium can serve as a replacement. The word "thin" was removed because trivalent chromium plating could be used for decorative or functional purposes, and functional plating includes depositing a thicker layer of chromium onto a base material than the relatively thin deposit provided by decorative chrome plating.

Verifiable

Purpose for Adding Definition of "Verifiable"

This provision defines "verifiable" as claims of emission reductions that can be accurately, truthfully documented, and transparent such that CARB or the District can objectively review and reproduce such claims.

Rationale for Adding Definition of "Verifiable"

This provision is necessary to define the term "verifiable," which is used in the definition of "enforceable." If an owner or operator elects to use an alternative compliance method to replace an emission limitation in the Proposed Amendments, their request must show that the alternative method they propose will achieve equal or greater reductions of emissions as the requirement(s) they propose to replace and provide documentation demonstrating that these reductions are enforceable (e.g., a Source Test). Since the reductions must be verifiable in order to be enforceable, it is necessary to define what "verifiable" means. The District must determine whether requests to use alternative methods of compliance will be able to

achieve emission reductions that are enforceable. To do so, it will be necessary that these reductions can be accurately, truthfully documented, and transparent such that CARB or the District can objectively review and reproduce.

Vestibule

Purpose for Adding Definition of "Vestibule"

This provision was added to define "vestibule" as an antechamber, hall, or room that connects a door leading to the exterior with a door leading to the rest of the building.

Rationale for Vestibule

The definition is necessary because the term "vestibule" is used in the definition in section 93102.3 of a "protected opening method." CARB included this definition to clarify the meaning of the option to use a vestibule as a protected opening method for a building enclosure. Staff defined "vestibule" as an antechamber, hall, or room that connects a door leading to the exterior of the building with another door leading to the rest of the building because this would limit the emissions that could escape from the building.

Weekly

Purpose for Changes to Definition of "Weekly"

The definition was amended to add the following phrase: "that the facility is operating."

Rationale for Changes to Definition of "Weekly"

The amendment was necessary because CARB does not expect a facility to perform weekly requirements (e.g., housekeeping and inspections) during periods of time where the facility is not operating. For example, if a facility ceases operation for a full week, they need not conduct housekeeping or an inspection during that week. The addition of the phrase "that the facility is operating" provides consistency with the definitions for "daily" and "monthly."

5. § 93102.4 Requirements for Chrome Plating Facilities that Use Hexavalent Chromium

Purpose for Overarching Amendments to Section 93102.4

Staff significantly revised section 93102.4 to set new requirements that apply to chrome plating facilities that use hexavalent chromium.

Rationale for Overarching Amendments to Section 93102.4

The amendments throughout section 93102.4 are necessary because CARB has modified the requirements for chrome plating facilities that use hexavalent chromium to reduce and ultimately eliminate emissions of hexavalent chromium from chrome plating operations in California.

Purpose for Changes to Section 93102.4

The section title was amended to change "existing, modified, and new hexavalent chromium electroplating and chromic acid anodizing facilities" to "chrome plating facilities that use hexavalent chromium."

The 2007 ATCM includes several paragraphs prior to section 93102.14(a) that describe the contents of section 93102.4. The Proposed Amendments remove these paragraphs and replace them with the following sentence: "This section sets forth requirements that apply to all facilities using hexavalent chromium for chrome plating operations, except for those facilities that only operate enclosed hexavalent chromium plating tanks."

Rationale for Changes to Section 93102.4

"Existing, modified, and new" was removed from the title of section 93102.4 because all facilities are either existing, modified, or new, rendering this language unnecessary. The title was amended to incorporate the new terminology such that it says, "chrome plating facilities that use hexavalent chromium" instead of "hexavalent chromium electroplating and chromic acid anodizing facilities."

The introductory text was removed because descriptive narrative is not needed. Some of this language is moot because it discussed requirements that came into effect from 2007 to 2011. Each subsection now has a description of its applicability and effective date, as needed. The introductory sentence that replaced these paragraphs is necessary to specify that section 93102.4 applies to all facilities using hexavalent chromium for chrome plating operations, except for facilities that only operate enclosed hexavalent chromium plating tanks. This is necessary because facilities that only operate hexavalent chromium plating tanks that are enclosed must comply with the special provisions set forth in section 93102.6 rather than section 93102.4. Because section 93102.4 only applies to facilities using hexavalent chromium, chrome plating facilities will not need to meet these requirements once they have removed hexavalent chromium from their operations in accordance with the phase out.

Section 93102.4(a)

Purpose for Adding New Section 93102.4(a)

A new version of subsection (a) was added to the Proposed Amendments that prohibits construction or operation of a new facility that uses hexavalent chromium for the purposes of chrome plating after January 1, 2024.

Rationale for Adding New Section 93102.4(a)

Subsection (a) of the Proposed Amendments is an important part of the phase out of hexavalent chromium. Prohibiting new facilities that use hexavalent chromium plating from being constructed or operated in California after January 1, 2024 will limit the exposure of communities to new sources of hexavalent chromium. If new chrome plating facilities are constructed or operated in California after January 1, 2024, they must use alternative technology rather than hexavalent chromium.

Purpose for Removal of Prior Section 93102.4(a)

The Proposed Amendments remove the version of subsection (a) in the 2007 ATCM. The previous version of subsection (a) set forth requirements that apply to existing hard chrome plating and chromic acid anodizing facilities in operation before October 24, 2007. Both subsection (a)(1) and (a)(2) set forth limits that applied until the provisions in subsection (b) became applicable. Subsection (a)(1) included emission limits applicable to large, medium, and small facilities. Subsection (a)(2) included requirements for add-on air pollution control equipment or fume suppressants.

Rationale for Removal of Prior Section 93102.4(a)

The version of subsection (a) in the 2007 ATCM has been removed since the requirements are no longer applicable. Subsection (a) of the 2007 ATCM only applied until the provisions in subsection (b) became effective on October 24, 2007.

Section 93102.4(b)

Purpose for Adding New Section 93102.4(b)

Subsection (b) was added to the Proposed Amendments to set forth the requirements related to the phase out of hexavalent chromium from existing chrome plating facilities. Subsection (b) only includes the heading "phase out that applies to all existing facilities that use hexavalent chromium."

Subsection (b)(1) sets forth the phase out of hexavalent chromium from decorative chrome plating on January 1, 2027. Subsection (b)(2) provides an extension of up to one year to the decorative chrome plating phase out. Subsection (b)(3) sets forth the phase out of hexavalent chromium from functional chrome plating on January 1, 2039.

Rationale for Adding New Section 93102.4(b)

The addition of subsection (b) is necessary to set forth the phase out requirements for decorative and functional chrome plating, which will eliminate emissions of hexavalent chromium from the chrome plating industry in California. The heading is necessary for organization and readability to signal to the reader that subsection (b) is the provision that sets forth the phase out. The phrase "that applies to all existing facilities that use hexavalent chromium" is necessary to specify the applicability of the phase out provisions.

Due to the high toxicity of hexavalent chromium, the health impacts of exposure to hexavalent chromium, the proximity of chrome plating facilities to sensitive receptors and disadvantaged communities, and following extensive evaluation of air monitoring data, a zero emission level is necessary to prevent an endangerment of public health. The Proposed Amendments will eliminate hexavalent chromium emissions from chrome plating operations in California by phasing out hexavalent chromium and encouraging the transition to less toxic alternatives.

As discussed above, hexavalent chromium is a known human carcinogen with no safe exposure level, and prolonged exposure may cause lung cancer. 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 (see Section V.(A)(1)). Noncancer impacts linked to hexavalent chromium exposure include respiratory irritation, severe nasal and skin ulcerations and lesions, perforation in the nasal septum, liver and kidney failure, and birth defects (see Section II.(E)2. of Appendix F – Health Risk Assessment).

The phase out of hexavalent chromium is necessary to protect communities where chrome plating facilities are located from exposure to this TAC. CARB found that chrome plating facilities operate in communities exposed to multiple sources of TACs, contributing to cumulative impacts, which is particularly harmful to sensitive receptors. Approximately nine percent of all chrome plating facilities are located within approximately 300 meters of a school (see Section (A) of the Executive Summary). The data also show that chrome plating facilities are often located in low income communities and communities of color. As discussed above, approximately 10 percent of chrome plating facilities are located within 20 meters of sensitive receptor(s) (see Section II.(D)). Approximately 14 percent of chrome plating facilities are located within communities selected by the Board under AB 617 (see Section (A) of the Executive Summary). These selected communities have high cumulative exposure burdens from toxic air contaminants and criteria air pollutants. Also, 73 percent of the chrome plating facilities in California are located within communities designated as SB 535 disadvantaged communities because they have a CalEnviroScreen 4.0 score between 75 percent and 100 percent.

Many communities continue to be impacted by emissions of hexavalent chromium from multiple chrome plating facilities in addition to other sources of hexavalent chromium and other TACs. These cumulative impacts have been a long-standing concern of communities. For example, air monitoring conducted in Northern California demonstrated high concentrations of hexavalent chromium measured downwind from a chrome plating facility, including a reading of 307 ng/m^3 during a malfunction of the facility's add-on air pollution control device (see Section II.(C)). These values are concerning because, if a sensitive receptor is exposed to a concentration of 1.0 ng/m^3 for 30 years, the associated potential cancer risk is approximately 360 chances per million.

As such, the Proposed Amendments phase out the use of hexavalent chromium to prevent communities from being exposed to hexavalent chromium from chrome plating operations. Details on the individual subsections are discussed below.

Purpose for Adding New Section 93102.4(b)(1)

Subsection (b)(1) prohibits the use of any hexavalent chromium for the purposes of decorative chrome plating after January 1, 2027.

Rationale for Adding New Section 93102.4(b)(1)

Subsection (b)(1) is necessary to establish the phase out of hexavalent chromium in existing decorative chrome plating on January 1, 2027. The phase out gives decorative facilities three years (plus a potential one-year extension under subsection (b)(2)) to transition to alternatives to hexavalent chromium. Facilities are not required to switch to any specific alternative. CARB anticipates that the commercial availability of trivalent chromium plating systems for

decorative applications will allow sufficient time for decorative plating facilities to complete the transition from hexavalent chromium to trivalent chromium by January 1, 2027.

Purpose for Adding New Section 93102.4(b)(2)

Subsection (b)(2) sets forth the process for requesting an extension to the phase out of hexavalent chromium for decorative chrome plating facilities. It allows for an extension of up to one year from the January 1, 2027, phase out date if the District determines that the facility needs more time to procure or install equipment or to complete permitting or construction necessary to transition to technology that does not use hexavalent chromium.

Subsections (A)–(D) set forth the procedure for an owner or operator to request an extension and for the District issue a determination regarding the request. The Purpose and Rationale for these subsections is provided in detail below.

Rationale for Adding Section 93102.4(b)(2)

Staff included subsection (b)(2) to provide facilities an option to request a one-year extension to the decorative chrome plating phase out. This extension provides flexibility to address concerns stakeholders voiced during workshops regarding delays that are beyond the owner or operator's control. Although staff believe that the January 1, 2027, phase out date provides sufficient time for decorative plating facilities to convert to alternative technology, there may be delays associated with the conversion process. It is important to allow facilities that are undergoing a good faith effort to comply with the Proposed Amendments additional time if it is necessary for the reasons listed in subsection (A).

CARB is allowing an extension of up to one year to accommodate potential delays in the conversion while ensuring that hexavalent chromium is expeditiously phased out from decorative chrome plating facilities to protect communities. The length of the extension granted by the District will depend on the amount of time the facility demonstrates is needed to convert to alternative technology but may not exceed one year from the phase out (January 1, 2028).

Requests are to be submitted to the Districts for evaluation because the District will be in the best position to determine if the request demonstrates an extension is needed since the District will be required to modify the facility's permit to convert the facility to alternative technology.

Purpose for Adding Section 93102.4(b)(2)(A)

Subsection (A) sets forth the procedure an owner or operator must follow if they elect to request an extension. The requests must be submitted to the District by October 1, 2026, as required by Appendix 1. Appendix 1 sets forth requirements for submittals to the District, including the attestation requirement.

The request must demonstrate that the extension is necessary for one or more of the following reasons that is beyond the owner or operator's control: 1. The procurement of equipment necessary to replace hexavalent chromium is delayed; 2. the installation of equipment necessary to replace hexavalent chromium is delayed; 3. the District has not issued the authority to construct in time to complete construction by January 1, 2027; 4. the

facility needs more time to complete construction necessary to transition to technology that does not use hexavalent chromium.

Rationale for Adding Section 93102.4(b)(2)(A)

Subsection (A) is necessary to establish the procedure and requirements for submission of a request for an extension to the January 1, 2027 decorative chrome plating phase out date in section 93102.4(b)(1). The due date of October 1, 2026, for submission of a request for an extension was chosen because it is three months before the phase out date, which will allow sufficient time for a facility to identify whether an extension is needed and for the District to issue its determination prior to the phase out date. The justification must be based on a reason that is beyond the owner or operator's control. This is necessary to ensure that owners and operators are not granted an exemption for stalling the transition to alternative technology or for otherwise causing delays.

Subsection (A)1.–4. lists the justifications available to be used in the request to demonstrate the need for an extension. The request need only demonstrate that one of these justifications is applicable but can include multiple justifications at the owner or operator's discretion. These justifications allow an extension to the phase out date if there are delays in the procurement or installation of equipment necessary to replace hexavalent chromium, if the District has not issued the authority to construct in time for construction to be completed by the phase out date, or if the facility needs more time to complete construction necessary to transition to technology that does not use hexavalent chromium. This extension provides flexibility to address concerns stakeholders voiced during workshops regarding delays in conversion that could result from delays in procurement or installation of necessary equipment, delays in the issuance of an authority to construct from a District, or the time required to complete construction, all of which may be caused by various issues and complications.

Purpose for Adding Section 93102.4(b)(2)(B)

Subsection (B) outlines what the request must demonstrate and the documentation that must be provided to substantiate the request, which depends on what justification the request claims. Subsection (B)1. provides that, if the procurement of equipment necessary to convert to alternative technology is delayed, the facility must explain what equipment is delayed, why that equipment is necessary to convert, the reason for the delay, and the anticipated length of the delay. The request must include documentation demonstrating this information, such as a statement from the shipper or equipment supplier explaining the delay. Subsection (B)2. provides that, if the installation of equipment necessary to convert is delayed, the request must explain what equipment is delayed, why that equipment is necessary to convert, why the installation is delayed, and the anticipated length of the delay. The request must include documentation substantiating the delay, such as a statement from the facility regarding the inability to hire a suitable contractor or a statement from the contractor explaining why work was not able to be completed as scheduled. Subsection (B)3. provides that, if the District has not issued the authority to construct in time to complete construction by January 1, 2027, the request must provide documentation that the owner or operator applied for an authority to construct and that the District deemed the application complete by January 1, 2026. Subsection (B)4. provides that, if the facility needs more time to complete construction

necessary to transition to alternative technology, the request must explain why they need more time to complete construction, the anticipated timeline for completion. The request must include substantiating documentation.

Rationale for Adding Section 93102.4(b)(2)(B)

Subsection (B) is necessary to explain what the request must demonstrate and the documentation that must be provided to substantiate the request. The information to be included in the request is necessary to demonstrate an extension is needed for one of the listed justifications. The District will need to know the anticipated length of the delay to determine the length of the extension to be granted. This information must be documented in the request so that the District can substantiate the justification claimed in the request as the basis for the need for an extension.

If the extension is sought due to a delay in equipment procurement pursuant to subsection (A)1., the District will need to know what equipment is delayed, why that equipment is necessary to convert from hexavalent chromium, and the anticipated length of the delay. This will ensure that the District has all the required information to assess whether the delay is caused by issues with procurement of equipment necessary for the conversion and to determine whether to approve the request. For example, there could be a delay in shipping due to supply chain disruptions or a lack of availability of specific equipment.

If the request is sought due to a delay in the installation of equipment pursuant to subsection (A)2., the District will need to know what equipment is delayed, why the installation of equipment is delayed, and the anticipated length of the delay. This will ensure that the District has all the required information to assess whether the delay is caused by issues with the installation of equipment necessary for the conversion and to determine whether to grant an extension.

If the request is sought pursuant to subsection (A)3. because the permit has not been issued in time to complete construction by January 1, 2027, it must include documentation demonstrating that the owner or operator applied for an authority to construct prior to January 1, 2026. The request will not be approved if the facility delayed submitting a complete application for an authority to construct beyond January 1, 2026, because owners and operators should be diligent in preparing for the conversion in order to receive an extension due to delays on the District's end.

If the request is sought because the facility needs more time to complete construction necessary to convert pursuant to subsection (A)4., the request must explain why more time is needed and the anticipated timeline. For example, the construction may be delayed due to complications in hiring a qualified contractor because not every contractor has the required experience to handle chrome plating equipment. Including this information and the supporting documentation will ensure that the District has all the required information to assess whether the extension is needed to complete construction necessary for the conversion to alternative technology.

Purpose for Adding Section 93102.4(b)(2)(C)

Subsection (C) provides the procedure for a District to issue a notice of deficiency if a request does not contain the information and documentation required by subsection (b)(2)(B). The District must issue a notice of deficiency in writing within 30 days of the submittal of the request identifying the deficiency. If the owner or operator does not correct these deficiencies within 30 calendar days, the request will be denied.

Rationale for Adding Section 93102.4(b)(2)(C)

Subsection (C) is necessary to set forth the process for the District to issue a notice of deficiency for a request that does not contain all the information or documentation required by subsection (B). Staff selected 30 calendar days to provide the District sufficient time to review the request for all required elements and respond to the owner or operator in writing identifying any deficiencies. Allowing 60 days would slow the process down and could cause situations where the request is not assessed in time for the extension to be issued prior to the phase out date of January 1, 2027. Shorter time frames, such as 15 days, could overload the District if many requests are received at the same time, or if specific requests are complicated and require extensive evaluation.

After receiving a notice of deficiency, the owner or operator must submit a request that corrects these deficiencies within 30 calendar days of the issuance of the notice of deficiency or the request will be denied. This provides the owner or operator sufficient time to gather any additional information and documentation (such as statements from suppliers or contractors) and to update and resubmit the request. If the owner or operator does not correct the deficiencies within 30 days, the request will be denied.

Purpose for Adding Section 93102.4(b)(2)(D)

Subsection (D) sets forth the process for the District to approve a request if all the requirements listed in subsections 1. through 4. are met. The District must issue a notice of approval to the owner or operator in writing within 30 calendar days of the submittal of a complete request. The notice of approval must specify the date when the extension expires, which can be up to one year after the phase out date of January 1, 2027. The District must base the length of time the extension lasts on the additional time the request demonstrates is needed to complete the transition.

Subsection (D)1.–4. sets forth the requirements for approval of a request for an extension to the decorative chrome plating phase out. The District must approve the request if: 1. it was submitted as required by subsections (2)(A) (which includes submitting the request as required by Appendix 1); 2. it contains the information and documentation required by subsection (2)(B); 3. it demonstrates that the facility needs more time for one of the reasons listed in subsection (A)1.–4. (see above); and 4. the request demonstrates that the delay is for reasons that are beyond the owner or operator's control.

Rationale for Adding Section 93102.4(b)(2)(D)

Subsection (D) is necessary to establish the procedure for the District to approve a request for an extension to the decorative chrome plating phase out if the request meets the

requirements in the Proposed Amendments. If the request meets the requirements, the District must approve it by issuing a notice of approval to the owner or operator in writing within 30 days of the submittal of a complete request. This ensures that requests will be processed by the January 1, 2027, deadline. Requests must be approved or denied within 30 calendar days following submission unless the request is incomplete. If the request is incomplete, the timeline for approval will be 90 days (30 days for the District to review the request and issue a notice of deficiency, 30 days for the owner or operator to submit additional information, and 30 days for the District to review the resubmittal and issue an approval or denial). This will ensure that requests submitted by the October 1, 2026, deadline will be approved or denied by the January 1, 2027, phase out.

It is necessary for the District to specify the specific amount of time that the extension applies (up to one year) so that there is clarity regarding the length of the extension granted. The District may use its discretion to determine an appropriate timeframe to grant for each facility's extension based on the amount of additional time the request demonstrates is needed to complete the transition. Due to the potential variability of each request, the District needs discretion to set the extension based on the demonstrations of the need for an extension on a case-by-case basis.

The District must approve the request if it meets all the requirements in subsections 1.–4. Subsection 1. requires the request be submitted as required by subsection (2)(A) to be approved. Subsection (2)(A) includes the October 1, 2026, deadline and provides that the request must be submitted as required by Appendix 1. The District must deny the request if it is not submitted by this deadline or is not submitted as required by Appendix 1. This is necessary because the request must be complete, timely, and properly submitted in order to be approved. For example, the District must deny a request that does not include the required attestation statement because Appendix 1 requires that the owner and operator attest to the truth and accuracy of the contents of the submittal.

Subsection 2. requires the request include all information and documentation required by subsection (2)(A) to be approved. This is necessary because the District will need to evaluate the information and documentation required to be included in the request to substantiate the need for an extension prior to issuing approval.

Subsection 3. requires the request demonstrate an extension is necessary due to delay based on one of the justifications listed in subsection (A)1.–4. To be approved, the request must demonstrate that the facility needs more time following the January 1, 2027, phase out date to procure or install equipment necessary to transition to technology that does not use hexavalent chromium or to complete permitting or construction necessary to transition to alternative technology. Approval of the request may only be based on one of these enumerated justifications. The District can only approve an extension if the delay is related to equipment, permits, or construction necessary to complete the transition to alternative technology to hexavalent chromium. For example, the District could approve an extension due to delays in the permitting or construction necessary to install trivalent chromium technology, but the District could not approve an extension due to delays in installation of a sink that is not related to the transition to alternative technology.

Subsection 4. requires the request demonstrate that the delay is for reasons that are beyond the owner or operator's control so that facilities diligently prepare for the January 1, 2027, phase out by implementing changes necessary to transition to alternative technology. The extension provides flexibility to request an extension for delays associated with the transition, but an extension should not be granted for delays that are within the owner or operator's control. For example, the District cannot approve an extension if the owner or operator caused the delay due to their own untimeliness.

Purpose for Adding Section 93102.4(b)(2)(E)

Subsection (E) sets forth the process for the District to deny a request for an extension. The District must issue a notice of denial to the owner or operator in writing within 30 calendar days of the submittal of a complete request if any of the three subsections that follow apply. Subsection 1. requires denial if the request is not submitted as required by subsection (2)(A), which includes the October 1, 2026, deadline and the requirements in Appendix 1 for submittals. Subsection 2. requires denial if the request does not demonstrate that additional time is necessary due to one of the enumerated justifications in subsection (A)1.–4. (see above). Subsection 3. requires denial if the request does not demonstrate that the delay is for reasons that are beyond the owner or operator's control.

Rationale for Adding Section 93102.4(b)(2)(E)

Subsection (E) is necessary to establish the process for denial of an extension request. Subsection 1. is necessary because the District must deny requests that are not submitted as required by subsection (2)(A), which requires owners or operators to submit requests as required by Appendix 1 by October 1, 2026. If a request is not submitted by the October 1, 2026, or if it is not submitted as required by Appendix 1 (e.g., a request that does not include an attestation statement), it will be denied. This is included to ensure that requests are submitted following the requirements applicable to submittals to the District with enough time for the District to process them prior to the January 1, 2027, deadline. Subsection 2. is necessary because the District must deny requests that fail to demonstrate that an extension is necessary for one of the listed justifications in subsection (A)1. through (A)4. (see above). Subsection 3. is necessary so that facilities diligently prepare for the January 1, 2027, phase out by implementing changes necessary to transition to alternative technology. The extension should not be granted for delays that are within the owner or operator's control, such as a delay due to their own untimeliness in acquiring the equipment or permits or completing the installation or construction necessary to convert.

Purpose for Adding New Section 93102.4(b)(3)

Subsection (b)(3) sets forth the phase out of hexavalent chromium for functional chrome plating facilities after January 1, 2039.

Rationale for Adding New Section 93102.4(b)(3)

The phase out of hexavalent chromium from functional chrome plating facilities on January 1, 2039, is necessary to protect communities from emissions of this toxic air contaminant. Functional chrome plating facilities include the largest chrome plating facilities in California and expose the communities surrounding them to emissions of hexavalent chromium.

The phase out date is 15 years after the anticipated effective date of the Proposed Amendments (January 1, 2024) because the technology required to transition away from hexavalent chromium is not commercially available at this time for all functional plating applications. CARB anticipates that 15 years provides enough time for development and testing of replacement technology while incentivizing technology development. January 1, 2039 was chosen because an earlier phase out date may not allow sufficient time to develop and test replacement technology, and a later phase out date would not adequately incentivize the development of alternatives needed to protect communities from hexavalent chromium emissions.

Purpose for Adding Section 93102.4(b)(3)(A)

Subsection (A) requires CARB to conduct two technology reviews assessing the progress made in the development of alternative technologies to replace hexavalent chromium for hard chrome plating and chromic acid anodizing operations (the two types of functional chrome plating). CARB must provide a summary of the status of the development and availability of alternative technologies. Subsection (A)1. requires the first review to be complete by January 1, 2032, and the second by January 1, 2036.

Rationale for Adding Section 93102.4(b)(3)(A)

Subsection (A) is necessary because alternative technology is not yet commercially available for all hard chrome plating and chromic acid anodizing applications. During this formal review process, staff will assess the development of technologies that can replace hexavalent chromium in hard chrome plating and chromic acid anodizing to determine if the January 1, 2039, phase out date needs to be adjusted through another amendment.

Subsection (A)1. is necessary to set forth the deadline for completion of the technology reviews. CARB must complete the first technology review by January 1, 2032. This date was selected because it will provide sufficient time for significant development in alternative technologies. CARB must complete the second technology review by January 1, 2036. This review is intended to reassess any alternative technologies identified in the first technology review and identify any new emerging technologies. This date was selected because it provides four years after the first technology review for additional developments to occur and for CARB to complete an updated review. Further, this date was selected to provide three years for CARB to undergo the regulatory process for any amendments that may be necessary based on the findings of the technology reviews prior to the phase out on January 1, 2039.

Section 93102.4(c)

Purpose for Changes to Section 93102.4(c)

The version of subsection (b) in the 2007 ATCM has been renumbered to subsection (c) in the Proposed Amendments. The language in subsection (b) in the 2007 ATCM has been substantially amended in subsection (c) of the Proposed Amendments, as demonstrated in the underline/strikethrough in the Proposed Amendments and discussed in detail below.

Subsection (c) in the Proposed Amendments was adapted from subsection (b) of the 2007 ATCM and has been amended to say, "limits that apply to all chrome plating tanks that use hexavalent chromium." Undefined words "apply" and "all" that were capitalized in the 2007 ATCM were changed to lowercase. The term "chrome plating" replaced "hard and decorative chromium electroplating and chromic acid anodizing." Subsection (c) was amended to be applicable to "tanks" rather than "facilities." The Proposed Amendments delete the word "existing" and add the phrase "that use hexavalent chromium." The phrase "after October 24, 2007" was deleted.

Rationale for Changes to Section 93102.4(c)

The prior version of subsection (b) was renumbered to subsection (c) to accommodate the addition of the new subsection (b) (see above). This allows the phase out provisions applicable to new facilities in subsection (a) to be followed by the phase out provisions applicable to existing facilities in subsection (b) instead of being separated by the specific requirements applicable to chrome plating tanks now set forth in subsection (c).

Uncapitalizing the undefined terms "apply" and "all" improves clarity and readability by distinguishing only defined terms using capital letters. The term "existing" was removed because new facilities are not allowed to use hexavalent chromium after January 1, 2024, so all facilities covered by this provision will be existing facilities. The phrase "hard and decorative chromium electroplating and chromic acid anodizing" was changed to "chrome plating" to incorporate shorthand terminology, which improves consistency and readability. The phrase "after October 24, 2007" was removed since the date has passed.

The word "tanks" is used instead of "facilities" to improve clarity because the requirements set forth in section 93102.4 are specific to chrome plating *tanks* that use hexavalent chromium. These requirements in the 2007 ATCM were also only applicable to hexavalent chromium plating tanks. However, section 93102.4 of the 2007 ATCM did not need to specify that its requirements only applied to chrome plating tanks because section 93102.2 exempted tanks that are not chrome plating tanks from the 2007 ATCM altogether. The Proposed Amendments removed that exemption, so it is necessary to specify in section 93102.4(c) that this provision is applicable to chrome plating tanks (chrome plating tanks are a type of Tier III tank).

Purpose for Changes to Subsection (c)(1)

Subsection (c)(1) was amended to remove the phrases "of an existing hexavalent chromium facility" and "discharged to the atmosphere" and to add the phrases "from all chrome plating tanks that use hexavalent chromium" and "in the table."

Rationale for Changes to Subsection (c)(1)

The term "existing" was removed because new facilities are not allowed to use hexavalent chromium after January 1, 2024, so all facilities covered by this provision will be existing facilities, rendering the word "existing" unnecessary. The phrase "from all chrome plating tanks that use hexavalent chromium" replaced "of an existing hexavalent chromium facility" because the limits apply to all chrome plating tanks that use hexavalent chromium. Since the limits are specific to each tank, this change improves clarity. The phrase "discharged to the

atmosphere" was removed to improve clarity because the emissions may not be directly discharged to the atmosphere from the chrome plating tank but still need to be controlled because they could ultimately escape the facility and be released into the atmosphere. The phrase "in the table" was added to improve clarity since there are new subsections that are below subsection (1), and it is necessary to specify that the requirements referenced are included in the table.

Purpose for Changes to Subsection (c)(1)(A)

Subsection (A) was added to specify that the requirements in Table 93102.4 apply to functional chrome plating facilities until January 1, 2026.

Rationale for Changes to Subsection (c)(1)(A)

The addition of subsection (A) was necessary because the requirement in subsection (c)(1)(A) cease to be effective for functional chrome plating facilities when the 0.00075 mg/amp-hr emission limit set forth in subsection (c)(2) takes effect (see below).

Purpose for Changes to Subsection (c)(1)(B)

Subsection (B) was added to specify that the requirements in Table 93102.4 apply to decorative chrome plating facilities until January 1, 2027. If a facility receives an extension to the January 1, 2027, phase out date pursuant to section 93102.4(b)(2), the requirements in Table 93102.4 would continue to apply until the date that the extension expires.

Rationale for Changes to Subsection (c)(1)(B)

The addition of subsection (B) was necessary because the limits, which are only applicable to hexavalent chromium plating tanks, will no longer apply when decorative plating facilities phase out hexavalent chromium on January 1, 2027. If a facility receives an extension to the phase out date, it is necessary to specify that the limits in Table 93102.4 would apply until the extension expires because that would be when the facility must cease using hexavalent chromium. Note: if the facility is granted an extension pursuant to subsection (b)(2), the notice of approval of the extension request would identify the date when the extension expires (see above).

Purpose for Changes to Table 93102.4

Table 93102.4 sets forth the emission limitations applicable to existing tanks based on the distance to sensitive receptors and annual permitted ampere-hours. Table 93102.4 was amended to change the header of the table to say, "emission limitation" instead of "emission limits" and "chrome plating tanks" instead of "existing tanks." The effective date column has been deleted. Footnote 1 was changed from "Distance shall be measured as specified in section 93102.4(b)(2)(A)" to "sensitive receptor distance is the most current distance between the facility and the nearest sensitive receptor that is recorded with the District."

Rationale for Changes to Table 93102.4

The header of Table 93102.4 was changed to say "emission limitation" to use the defined term, which improves consistency and clarity. The term "chrome plating tanks" replaced "existing tanks" because the limits apply to all chrome plating tanks that use hexavalent

chromium, not just existing tanks, and would be applicable to chrome plating tanks added to the facility after the Proposed Amendments take effect.

The effective dates for the emission limitations in the version of Table 93102.4 in the 2007 ATCM have been removed since they have passed (the effective dates in the 2007 ATCM table ranged from 2008 to 2011). The limits in Table 93102.4 are already in effect for all existing facilities pursuant to the 2007 ATCM and will continue to be effective pursuant to the Proposed Amendments.

The reference in footnote 1 of the 2007 ATCM to section 93102.4(b)(2)(A) was removed because each facility currently operating has already determined their respective distance to the nearest sensitive receptor. Facilities need not recalculate that distance and may use the most current distance recorded with the District. The version of footnote 1 in Table 93102.4 of the Proposed Amendments explains that the sensitive receptor distance is the most current distance between the facility and the nearest sensitive receptor that is recorded with the District.

Purpose for Adding Subsection (c)(2)

Subsection (c)(2) sets a new emission limitation of 0.00075 mg/amp-hr of hexavalent chromium for each chrome plating tank at functional chrome plating facilities beginning on January 1, 2026. The emissions measured downstream of any add-on air pollution control device(s) must meet this emissions limit.

Rationale for Adding Subsection (c)(2)

Subsection (c)(2) is necessary to reduce emissions of hexavalent chromium into communities by increasing the stringency of the emission limitation applicable to functional chrome plating tanks after January 1, 2026. This emission limit is only applicable to tanks that are used for functional chrome plating because other tanks are subject to other provisions in the Proposed Amendments, with their own specific emission limits and requirements.

The 0.00075 mg/amp-hr limit in the Proposed Amendments reduces emissions by half the 0.0015 mg/amp-hr limit in the 2007 ATCM. Staff selected the 0.00075 mg/amp-hr limit because most functional chrome plating facilities are currently operating with control equipment on their chrome plating tanks that can meet this new limit. Functional chrome plating facilities that have chrome plating tanks not already meeting this limit have until January 1, 2026, to install or upgrade their control equipment to meet the limit for each chrome plating tank. Staff selected an effective date for this requirement that is two years following the anticipated effective date of the Proposed Amendments (January 1, 2024) to provide sufficient time for the District to complete its review of applications for authority to construct and for facilities to install any new control equipment or upgrade their existing systems to achieve compliance.

It is necessary to specify that the emission limit must be measured downstream of any add-on air pollution control device(s) to ensure that the measurements take into account the effectiveness of the device in reducing emissions.

Purpose for Removal of Prior Section 93102.4(b)(2)

The provisions in section 93102.4(b)(2) of the 2007 ATCM, titled "demonstrating compliance with the emission limitation in Table 93102.4," were removed. Section 93102.4(b)(2)(A) of the 2007 ATCM established the process for measuring the distance to the nearest sensitive receptor and required the distance to be submitted to the District. Section 93102.4(b)(2)(B) of the 2007 ATCM set forth an emission limitation of 0.0015 mg/amp-hr for certain facilities depending on the distance to sensitive receptors and permitted ampere-hours.

Rationale for Removal of Prior Section 93102.4(b)(2)

The Proposed Amendments remove section 93102.4(b)(2) of the 2007 ATCM because these provisions are no longer applicable. Subsection (b)(2)(A) was removed because facilities have already calculated the distance to the nearest sensitive receptor and submitted that information to their District. Facilities need not recalculate that distance and may use the most current distance recorded with the District. The calculation will not be needed for new chrome plating facilities because Table 93102.4 only applies to hexavalent chromium plating, and new facilities are not allowed to use hexavalent chromium after January 1, 2024. Subsection (b)(2)(B) was not necessary because the applicable requirements are set forth in Table 93102.4 of the Proposed Amendments.

Purpose for Removal of Prior Section 93102.4(b)(3)

The version of subsection (b)(3) in the 2007 ATCM has been removed from the Proposed Amendments because alternative method requirements have been consolidated into section 93102.14 and Appendix 8. The substantive requirements regarding demonstrating compliance by an alternative method that were in the version of subsection (b)(3) in the Chrome Plating ATCM were moved to section 93102.14 and Appendix 8 of the Proposed Amendments (see below).

Rationale for Removal of Prior Section 93102.4(b)(3)

The provisions in (b)(3) regarding demonstration of compliance with alternative methods have been moved to section 93102.14 and Appendix 8, which set forth the procedure for establishing alternative methods of compliance and the information required to be submitted to the District when an entity pursues an alternative method of compliance. This language was moved to improve organization because section 93102.14 and Appendix 8 set forth the requirements for pursuing alternative methods of compliance. Moving these requirements so that the procedures for alternative methods of compliance are all located in section 93102.14 and Appendix 8 improves organization and readability.

Purpose for Moving Section 93102.4(c) to 93102.4(e)

The version of subsection (c) in the 2007 ATCM has been moved to subsection (e) of the Proposed Amendments and is being substantially changed. The underline/strikethrough version of the regulatory text displays section 93102.4(c) entirely in strikethrough and section 93102.4(e) entirely in underline because substantial portions of the text in previous section 93102.4(c) have been moved to section 93102.4(e). The specific changes to the language are discussed in detail below (see Purpose and Rationale for Section 93102.4(e)).

The numbering changes to the subsections are described below:

2007 ATCM	Proposed Amendments
Section 93102.4(c)	Section 93102.4(e)
[added]	Section 93102.4(e)(1) [new]
Section 93102.4(c)(1)	Section 93102.4(e)(2)
Section 93102.4(c)(2)	Section 93102.4(e)(3)
Section 93102.4(c)(3)	[removed]

Rationale for Moving Section 93102.4(c) to 93102.4(e)

The version of subsection (c) in the 2007 ATCM has been moved to subsection (e) of the Proposed Amendments to improve organization and readability so that all of the provisions applicable to modified facilities that use hexavalent chromium are located in the same place. The numbering of subsection (c) was changed to subsection (e) to accommodate the addition of sections 93102.4(b) and (d) to the Proposed Amendments.

Section 93102.4(d)

Purpose for Adding Section 93102.4(d)

Section 93102.4(d) was added to the Proposed Amendments to set forth the building enclosure requirements.

Rationale for Adding Section 93102.4(d)

Section 93102.4(d) is necessary because building enclosures are one of the main control methods for reducing fugitive emissions of hexavalent chromium that are released from chrome plating facilities into the surrounding communities. Building enclosures reduce fugitive emissions by retaining hexavalent chromium containing dust particles within the enclosure, where they can be removed by the required housekeeping practices. Building enclosures also reduce fugitive emissions by reducing fugitive vapors and entrained particles that escape from the enclosure instead of being captured by the add-on controls.

Purpose for Adding Subsection (d)(1)

Subsection (d)(1) sets forth the building enclosure requirements for functional chrome plating facilities operating Tier I, Tier II, or Tier III tanks that apply beginning January 1, 2026.

Rationale for Adding Subsection (d)(1)

The building enclosure requirements in subsection (d) apply only to functional plating facilities to prevent fugitive emissions of hexavalent chromium in the 15-year interim period prior to the January 1, 2039, phase out date for functional plating facilities. The building enclosure requirements do not apply to decorative plating facilities because they are prohibited from using hexavalent chromium after January 1, 2027. Decorative plating facilities need not incur the expense of constructing building enclosures to reduce fugitive emissions because they must cease using hexavalent chromium one year after the January 1, 2026, effective date of the building enclosure requirements.

Subsection (d)(1) applies to functional chrome plating facilities operating Tier I, Tier II, and

Tier III tanks, which, by definition, contain hexavalent chromium. The January 1, 2026, effective date was selected to provide two years for functional chrome plating facilities to move tanks into a building enclosure or to construct or install the required building enclosures around hexavalent chromium tanks following the anticipated effective date of the Proposed Amendments (January 1, 2024).

Purpose for Adding Subsection (d)(1)(A)

Subsection (A) requires all Tier I, II and III hexavalent chromium tanks to be operated within a building enclosure.

Rationale for Adding Subsection (d)(1)(A)

Subsection (A) is necessary because requiring Tier I, II and III hexavalent chromium containing tanks to be operated inside a building enclosure will reduce the amount of fugitive emissions that escape into the surrounding community.

Purpose for Adding Subsection (d)(1)(B)

Subsection (B) requires all building enclosure openings that are on opposite ends of the building enclosure from each other to be equipped with a protected opening method and prohibits them from being simultaneously open unless they are actively being used for the passage of vehicles, equipment, or people.

Rationale for Adding Subsection (d)(1)(B)

Subsection (B) is necessary to limit cross breeze over the tanks, which can carry emissions of hexavalent chromium out of the facility and into the surrounding community. This subsection requires the use of a protected opening method on any building enclosure openings on opposite ends of the building enclosure from one another. Protected opening methods will reduce the cross breeze over the tanks and limit the fugitive emissions of hexavalent chromium from escaping the building enclosure (see Purpose and Rationale section for the definition of "protected opening methods"). However, it is necessary to allow building enclosure openings to be simultaneously open when being actively used for ingress or egress.

Purpose for Adding Subsection (d)(1)(C)

Subsection (C) requires that all building enclosure openings directly facing any sensitive receptors within 1,000 feet of the facility be equipped with a protected opening method. This distance will be measured from the property line of the sensitive receptor to the building enclosure opening. All building enclosure openings that face sensitive receptors within 1,000 feet of the facility must be closed unless they are actively being used for the passage of vehicles, equipment, or people.

Rationale for Adding Subsection (d)(1)(C)

Subsection (C) is necessary to reduce the impacts to sensitive receptors located near chrome plating facilities by limiting fugitive emissions of hexavalent chromium that can escape through openings in the building enclosure. Using protected opening methods for building enclosure openings that directly face the sensitive receptor and keeping the opening closed

except when being used for the passage of vehicles, equipment, or people, will reduce fugitive emissions that escape into communities while allowing ingress and egress.

It is important for fugitive emissions to be reduced for facilities that are within 1,000 feet of a sensitive receptor to reduce impacts on sensitive individuals due to exposure to hexavalent chromium from nearby facilities. As discussed in Section V.(A)(1), below, concentration trends resulting from the emission of hexavalent chromium from chrome plating operations are localized. This means that estimated cancer risks are highest at receptors closest to the emission source. The distance of 1,000 feet is consistent with the use of the 1,000 foot threshold in the 2007 ATCM as the minimum distance that any new facility must be from the boundary of any area that is zoned for residential or mixed use or any school. Also, Rule 1469(d)(6)(B) sets 1,000 feet as the threshold distance below which building enclosure openings facing a sensitive receptor must be closed.

It is necessary to establish that the distance between the sensitive receptor and the building enclosure opening must be measured from the property line of the sensitive receptor to the building enclosure opening to provide clarity as to the distance to be measured. This ensures that the measurement starts from the closest point on the sensitive receptor's property. For example, if the sensitive receptor is a school, and the playground is the closest part of the school's property to the building enclosure opening, the distance would be measured up to the property boundary of the playground rather than the distance to the school's building.

Purpose for Adding Subsection (d)(2)

Subsection (d)(2) sets forth specific requirements for building enclosures that apply to functional chrome plating facilities operating Tier II and Tier III hexavalent chromium tanks beginning January 1, 2026.

Rationale for Adding Subsection (d)(2)

Subsection (d)(2) is necessary to specify building enclosure requirements applicable to functional chrome plating facilities operating Tier II and Tier III tanks, which, by definition, contain hexavalent chromium. More stringent enclosure requirements than those in subsection (d)(1) are necessary because Tier II and III tanks have higher potential hexavalent chromium emissions than Tier I tanks due to their elevated operating temperature and hexavalent chromium concentrations. Functional chrome plating facilities operating Tier II and III tanks have until January 1, 2026, to meet the requirements of this section. This provides enough time for facilities to come into compliance by constructing the required building enclosure or implementing any modifications needed to ensure Tier II and Tier III tanks are located within a building enclosure that meets these requirements.

Purpose for Adding Subsection (d)(2)(A)

Subsection (A) requires that any building enclosure in which a Tier II or Tier III tank is located have building enclosure openings that do not exceed 3.5 percent of the building enclosure envelope. Subsection (A)1. specifies that the building enclosure envelope surface area is to be calculated by adding the surface area of the floor, the exterior walls, roof, and the area of the roof. The area of the floor may be used for the area of the roof. Subsection (A)2. specifies that the total area of the building enclosure openings shall be calculated by adding together

the total surface area for all building enclosure openings, except building enclosure openings that are equipped with a protected opening method. Subsection (A)3. requires that the ongoing compliance status report submitted pursuant to section 93102.13(b) (the Reporting Requirements section) include the dimensions used in the calculations for the building enclosure envelope and the building enclosure openings and schematics showing these dimensions and the locations of building enclosure openings.

Rationale for Adding Subsection (d)(2)(A)

Subsection (A) is necessary to limit the surface area of openings in the building enclosure to 3.5 percent of the building enclosure envelope surface area. Limiting the enclosure openings to 3.5 percent of the building envelope will reduce the amount of hexavalent chromium released from the building enclosure into the surrounding communities. Staff chose 3.5 percent to balance the need for building enclosure openings in chrome plating facilities (doorways, windows, etc.) with the need to limit the amount of air that flows into and out of the building enclosure. Reducing air flow out into and out of the building enclosure reduces fugitive emissions by limiting air flow across the chrome plating tanks. Such air flow can interfere with the emission collection system and carry fugitive emissions of hexavalent chromium from the building enclosure into the community. For example, ambient monitoring and sampling at metal finishing facilities in Newport Beach, Paramount, and Long Beach showed elevated levels of hexavalent chromium that were attributed to cross-drafts that allowed emissions from hexavalent chromium emitting tanks to exit the building enclosure (see Section II.(B)). Because South Coast AQMD Rule 1469(e)(1) already limits building enclosure openings to 3.5 percent of the surface area of the building envelope, functional chrome plating facilities operating in the South Coast AQMD would not be expected to modify their existing building enclosures.

Subsection (A)1. is necessary to specify that facilities must calculate the building enclosure envelope surface area by adding the surface area of the floor, the exterior walls, and the roof. The owner or operator may elect to substitute the area of the floor for the area of the roof in this calculation, which simplifies the calculation for roofs that are not flat.

Subsection (A)2. is necessary to specify that facilities must calculate the total area of all building enclosure openings by adding the surface area of all building enclosure openings except for those that are equipped with a protected opening method. Building enclosure openings equipped with a protected opening method are not counted because the protected method reduces the fugitive emissions that can escape from the opening.

Subsection (A)3. is necessary to require the ongoing compliance status report to include the dimensions used in the calculations of the surface area of the building enclosure envelope and building enclosure openings and schematics depicting the dimensions and locations of the openings so that the District can verify that the requirements of subsection (d)(2)(A) are met. CARB or the District may also need this information during inspections and enforcement.

Purpose for Adding Subsection (d)(2)(B)

Subsection (B) requires roof openings within 15 feet from the edge of any Tier II or Tier III

tank to remain closed unless the opening is equipped with a HEPA filter, or other add-on air pollution control device that reduces emissions to an equal or greater extent as a HEPA filter, that fully covers the opening. Subsection (B)1. includes an exemption for openings that are actively providing access for equipment or parts. Subsection (B)2. includes an exemption for openings that provide intake or circulation air for a building enclosure. These openings cannot create air velocities that impact the collection efficiency of a ventilation system for an add-on air pollution control device, which must be verified via a smoke test per Appendix 4.

Rationale for Adding Subsection (d)(2)(B)

Subsection (B) is necessary because hexavalent chromium fumes are emitted from Tier II and Tier III tanks during standard operation and rise into the air. These fumes could escape the building enclosure through openings in the roof into the surrounding community. Openings further than 15 feet away from the Tier II and Tier III tanks are less likely to allow substantial releases of hexavalent chromium as the hexavalent chromium is expected to settle, where it can be cleaned up in the housekeeping process. Equipping openings in the roof located within 15 feet from the edge of any Tier II or Tier III tank with a HEPA filter or other control device will control the emissions escaping through that opening similarly to a control device equipped directly on the tank.

Subsection (B)1. is necessary because facilities may need to bring in parts or equipment through a roof opening. Roof openings are allowed to be open while being used to bring in or remove parts via a crane or other device capable of delivering parts through the roof of a facility.

Subsection (B)2. is necessary because facilities may need openings that allow for the intake or circulation of air for a building enclosure. Openings that are part of the intake or circulation system are expected to pull airflow through the opening, which would limit the escape of fumes out of the roof. It is important that these openings do not interfere with the efficiency of any control device that is equipped on a Tier II or Tier III tank. Intake air that is at too high a flow rate can cause a draft over the tank and actively push hexavalent chromium fumes away from the control device inlets. Facilities must use the smoke test procedures in Appendix 4 to verify that there is no impact on the control device's collection system due to openings in the roof that provide intake or circulation air for a building enclosure. If the smoke test demonstrates that there is no impact, the opening may remain open; otherwise, it must be closed or equipped with a HEPA filter or other add-on pollution control device that reduces emissions to an equal or greater extent as a HEPA filter.

Purpose for Adding Subsection (d)(2)(C)

Subsection (C) sets forth the requirements applicable to breaches in the building enclosure. The Proposed Amendments define "breach" as any opening in a building enclosure that allows air to escape to the exterior and does not fall within the definition of a "building enclosure opening (see above). This subsection requires that a breach in a building enclosure be repaired within 72-hours of discovery by the facility. The owner or operator may request that the District grant an extension beyond the 72-hour limit by contacting the District in accordance with the District's procedures applicable to such requests. The District has discretion to approve a request for an extension if it is submitted before the expiration of the

72-hour limit and demonstrates both of the following: 1. the repair will take longer than 72 hours, or the equipment, parts, or materials needed for the repair cannot be obtained within 72 hours; and 2. temporary measure are implemented that prevent the release of fugitive emissions from the breach.

Rationale for Adding Subsection (d)(2)(C)

Subsection (C) is necessary to ensure that any breach in the building enclosure (such as a broken window) is promptly repaired to prevent the release of fugitive emissions from the breach. The 72-hour limit provides sufficient time for workers to repair the breach. If 72 hours is not sufficient to complete the repair, the facility may request an extension, as long as the request is submitted to the District before the 72-hour limit has expired. This ensures that the owner or operator is diligent in requesting an extension and fixing the breach.

Subsection (C)1. is necessary so the District can grant an extension if the facility demonstrates that the repair will take longer than 72 hours or that the equipment, parts, or materials needed for the repair cannot be obtained within 72 hours. Shipping delays, worker availability, or other limitations can create situations where such repairs take longer than the 72-hour limit.

Subsection (C)2. is necessary because a facility granted an extension must implement temporary measures to prevent the release of fugitive emissions from the breach while the facility completes the required repairs. For example, a temporary measure, such as sealing a broken window with a plywood board, could be used while a facility waits for a replacement window to be manufactured, delivered, and installed.

Purpose for Adding Subsection (d)(3)

Subsection (d)(3) sets forth requirements for alternative building enclosure compliance plans.

Rationale for Adding Subsection (d)(3)

Subsection (d)(3) is necessary to allow an avenue for alternative building enclosure compliance plans to be implemented in the event that the building enclosure requirements conflict with other applicable municipal codes or agency requirements related to worker safety.

Purpose for Adding Subsection (d)(3)(A)

Subsection (A) provides that, if owner or operator cannot comply with any of the building enclosure requirements in subsections (d)(1) and (d)(2) due to conflicting requirements set forth by the federal Occupational Safety and Health Administration (OSHA), California Occupational Safety and Health Administration (CalOSHA), or other applicable municipal codes or agency requirements directly related to worker safety, the Owner or Operator must submit a request to implement an alternative building enclosure compliance plan to the District in accordance with the District's procedures.

Rationale for Adding Subsection (d)(3)(A)

Subsection (A) allows alternative building enclosure compliance plans to be used if a facility cannot comply with the building enclosure requirements in subsections (d)(1) and (d)(2) due

to conflicting requirements by OSHA, CalOSHA, or other municipal codes or agency requirements that are directly related to worker safety. Although CARB does not expect that any such requirements will conflict with the Proposed Amendments, this provision is necessary to provide an alternative in the event that a conflict between these requirements does occur. The request must be submitted to the District in accordance with the District's procedure, such as the applicable deadline established by the District.

Purpose for Adding Subsection (d)(3)(B)

Subsection (B) lists the information the Owner or Operator must include in a request to implement an alternative building enclosure compliance plan, which must be submitted to the District as required by Appendix 1. Subsection (B)1. requires an explanation as to why the facility cannot comply with the applicable building enclosure requirement(s) in sections (d)(1) or (d)(2) due to worker safety requirements set forth by OSHA, CalOSHA, or another municipal code or agency. Subsection (B)2. requires a detailed description of the alternative measures and documentation that demonstrates that these measures will restrict air from escaping the building enclosure in an amount equal or greater than the amount that would have been achieved by compliance with the building enclosure requirements they seek to replace. Subsection (B)3. requires that the owner or operator specify a timeframe for implementation of the alternative building enclosure compliance plan.

Rationale for Adding Subsection (d)(3)(B)

Subsection (B) is necessary to establish the required contents for a request to implement an alternative building enclosure compliance plan. The request must be submitted as required by Appendix 1, which sets forth the requirements for submittals to the District, including the attestation requirement. Subsection (B)1. is necessary so the District can determine whether the facility cannot comply with the applicable building enclosure requirements due to worker safety requirements set forth by OSHA, CalOSHA, or another municipal code or agency that conflict with these requirements. The request must identify what requirements it claims conflict with the applicable building enclosure requirements. Subsection (B)2. is necessary because the District will need to evaluate a detailed alternative building enclosure compliance plan, including documentation that demonstrates that the proposed measures will restrict air from escaping the building enclosure in an amount equal or greater than the amount that would have been achieved by compliance with the building enclosure requirements in subsection (d)(1) or (d)(2). It is important that any alternative building enclosure measures still restrict the release of fugitive emissions of hexavalent chromium into the communities surrounding the facility. Subsection (B)3. is necessary so the District can ensure that the alternative building enclosure compliance plan will be put into place promptly to reduce fugitive emissions escaping the facility into the surrounding community.

Purpose for Adding Subsection (d)(3)(C)

Subsection (C) sets forth the procedures for the District to approve, disapprove, or issue a notice of deficiency in writing in response to a request for an alternative building enclosure compliance plan. Subsection (C)1. establishes the procedure for the District to issue a notice of deficiency in writing if a request is incomplete. The owner or operator must submit a revised compliance plan that addresses these deficiencies, and the request must be

submitted in accordance with the District's procedures, or the request will be disapproved. Subsection (C)2. requires the District to deny any request that will not restrict air from escaping the building enclosure in an amount equal or greater than the amount that would have been achieved by compliance with the building enclosure requirement in subsection (d)(1) or (d)(2) that it is replacing. Subsection (C)3. requires the District to approve the alternative building enclosure compliance plan if the request is complete and demonstrates that the alternative plan restricts air from escaping the enclosure in an amount equal or greater than the amount that would have been achieved by compliance with subsections (d)(1) or (d)(2). The notice of approval must specify whether it replaces requirements set forth in subsection (d)(1) or (d)(2), or both, and must specify the alternative method to be implemented and the timeframe in which it must be implemented.

Rationale for Adding Subsection (d)(3)(C)

Subsection (C) is necessary to provide the procedure for the District to issue a decision regarding the request to implement an alternative building enclosure compliance plan. Subsection (C)1. is necessary to ensure that incomplete requests are either revised to be complete or disapproved. It is necessary for the request to be submitted to the District in accordance with the District's procedures. For example, the corrected request must be submitted by the applicable deadline established by the District, or it will be disapproved.

Subsection (C)2. requires the District to deny the request if they determine that the alternative method will not restrict air flow from the building enclosure in an amount equal or greater than the building enclosure requirement in subsection (d)(1) or (d)(2) that the request proposed to replace. This is necessary to ensure that the alternative method will be as protective of the surrounding community as the requirement(s) it is replacing.

Subsection (C)3. provides the procedure for a District to approve a complete request that makes the required demonstration regarding air flow. Approval is contingent upon the request demonstrating that the alternative plan would restrict air from escaping the building enclosure in an amount equal to or greater than the amount that would have been achieved through compliance subsection (d)(1) or (d)(2) (depending on which subsection the request proposes to replace with the alternative plan). This ensures that the alternative plan will sufficiently restrict air from escaping into surrounding communities (see above). It is necessary for the approval to specify in writing what building enclosure requirements are replaced by it, the alternative method to be implemented, and the timeframe for that implementation. This ensures that the alternative building enclosure compliance method will be instituted promptly and will restrict air from escaping the enclosure as required.

Purpose for Adding Subsection (d)(3)(D)

Subsection (D) states that, if the owner or operator complies with the approved alternative building enclosure compliance plan, their facility is exempted from the applicable building enclosure requirements in subsections (d)(1) or (d)(2) (or both) that the notice of approval specifies the plan is intended to replace. The alternative building enclosure compliance plan exempts the facility from these requirements for the timeframe indicated in the notice of approval.

Rationale for Adding Subsection (d)(3)(D)

Subsection (D) is necessary to clarify that operating under an approved alternative building enclosure compliance plan exempts the facility from compliance with the building enclosure provisions that the notice of approval specifies are being replaced by the alternative plan. This exemption lasts for the duration of the timeframe indicated in the notice of approval of the alternative building enclosure compliance plan.

Purpose for Removal of Prior Section 93102.4(d)

The requirements set forth in section 93102.4(d) of the 2007 ATCM have been removed. Subsection (d) of the 2007 ATCM set forth requirements applicable to new hexavalent chromium plating facilities beginning October 24, 2007.

Rationale for Removal of Prior Section 93102.4(d)

This provision was removed because it is no longer necessary. The Proposed Amendments prohibit the construction or operation of new hexavalent chromium plating facilities by January 1, 2024. Therefore, requirements related to new facilities using hexavalent chromium is not necessary.

Section 93102.4(e)

Purpose for Changes to Section 93102.4(e)

Section 93102.4(e) contains the requirements that were in section 93102.4(c) of the 2007 ATCM. The text that was moved from subsection (c) of the 2007 ATCM has been substantially amended. The numbering changes to the subsections are described below:

2007 ATCM	Proposed Amendments
Section 93102.4(c)	Section 93102.4(e)
[added]	Section 93102.4(e)(1) [new]
Section 93102.4(c)(1)	Section 93102.4(e)(2)
Section 93102.4(c)(2)	Section 93102.4(e)(3)
Section 93102.3(c)(3)	[removed]

The Proposed Amendments add a new requirement into section 93102.4(e)(1), which required the subsections that followed to be renumbered accordingly.

Note: the underline/strikethrough version of the regulatory text displays the language in section 93102.4(c) of the 2007 ATCM in strikeout and all of the language in section 93102.4(e) in underline since the text has been moved from section 93102.4(c) to section 93102.4(e). In addition to being moved, the language has undergone other amendments. The Purpose and Rationale sections below explain where the language was moved and provide a purpose and rationale for all changes. The language that was moved from subsection (c) to subsection (e) are depicted in strikethrough and underline below to demonstrate the changes to language from the 2007 ATCM for text that was moved to subsection (e) in the Proposed Amendments. The underline/strikethrough language provided below is intended to assist the reader in analyzing changes from the 2007 ATCM to the Proposed Amendments that have been made to provisions that were moved. This should

serve as a supplementary reference since the underline/strikethrough version of the regulatory text does not display these changes.

~~(c)~~(e) *Requirements for Modified ~~Hexavalent Chromium Electroplating or Chromic Acid Anodizing~~ Facilities using Hexavalent Chromium.*

This header for subsection (c) was changed to delete the phrase "modified hexavalent chromium electroplating or chromic acid anodizing" to "modified facilities using hexavalent chromium."

Rationale for Changes to Section 93102.4(e)

Subsection (c) has been renumbered to subsection (e) due to the addition of section 93102.4(b) and (d). Amendments to the subsection heading were necessary to reflect the new terminology used in the Proposed Amendments and so that the terms used match the defined terms discussed above. There are no changes to the applicability of this section due to the change in this header.

Purpose for Adding Subsection (e)(1)

Subsection (e)(1) was added to set forth requirements for modification of existing facilities that occur after January 1, 2024. This requirement was not included in the 2007 ATCM.

Modifications are only permissible if the conditions in (e)(1)(A) and (e)(1)(B) are satisfied. Subsection (A) requires that the permitted annual ampere-hours, after modification, do not exceed permitted levels for the existing of modified facility in place as of January 1, 2024. Subsection (B) requires that any hexavalent chromium containing tank(s) modified or added to the facility meets all applicable requirements of this regulation.

Rationale for Adding Subsection (e)(1)

Subsection (e) is necessary to limit hexavalent chromium emissions that will result from modifications of existing facilities. It is necessary to provide existing facilities the ability to make changes to their chrome plating operations to provide operational flexibility. Subsection (A) is necessary so that any modifications to the facility do not exceed the permitted annual ampere-hour limits for chrome plating operations that were in place as of January 1, 2024. This ensures potential hexavalent chromium emissions to the surrounding communities will not be increased due to the modification. Subsection (B) is necessary to ensure every hexavalent chromium containing tank that is modified or added to the facility meets all applicable requirements of the regulation that are applicable to that type of tank, which ensures that emissions from added or modified tank(s) will be controlled as required.

Purpose for Changes to Subsection (e)(2)

Subsection (e)(2) of the Proposed Amendments contains the requirements moved from section 93102.4(c)(1) of the 2007 ATCM.

Note: the underline/strikethrough version of the regulatory text displays the language in section 93102.4(c)(1) of the 2007 ATCM in strikeout and all of the language in section 93102.4(e)(2) in underline since the text has been moved from section 93102.4(c)(1) to section 93102.4(e)(2). In addition to being moved, the language has undergone other

amendments, as described below. The language that was moved from subsection (c)(1) to subsection (e)(2) is depicted in underline/strikethrough below to assist the reader in analyzing changes to the language that was in subsection (c)(1) of the 2007 ATCM and is now in subsection (e)(2) of the Proposed Amendments.

> ~~(1)~~(2) During ~~t~~Tank ~~o~~Operation, each ~~o~~Owner or ~~o~~Operator of a ~~m~~Modified ~~f~~Facility shall, upon iInitial ~~s~~Start-~~u~~Up and during all subsequent operation, control ~~h~~Hexavalent ~~c~~Chromium emissions ~~discharged to the atmosphere from that facility by reducing the hexavalent chromium emissions~~ from the Facility's ~~electroplating or anodizing tank(s)~~Chrome Plating Tank(s) by:
>
> (A) Using an ~~a~~Add-on ~~a~~Air ~~p~~Pollution ~~c~~Control ~~d~~Device(s) to control ~~h~~Hexavalent ~~c~~Chromium emissions, and
>
> (B) Meeting an emission limit of ~~0.0015~~0.00075 milligrams of Hexavalent Chromium per ~~a~~Ampere-~~h~~Hour or less.

The Proposed Amendments add the phrase "and during all subsequent operations" and remove the phrase "discharged to the atmosphere." The Amendments replace the phrase "from that facility by reducing the hexavalent chromium emissions from electroplating or anodizing tank(s)" with "from the Facility's chrome plating tank(s)." Subsection (A) was only amended to capitalize defined terms. Subsection (B) was amended to replace "0.0015" with "0.00075" and to add the phrase "of hexavalent chromium."

Rationale for Changes to Subsection (e)(2)

The phrase "and during all subsequent operations" was removed to clarify that the requirements apply to all operations following the modification and are not only applicable upon the initial startup. The phrase "discharged to the atmosphere" was deleted for clarity because the emissions from the tank may not be directly discharged into the atmosphere; they may be emitted into the building and then could be ultimately released into the atmosphere if they escape to the exterior. The phrase "that facility by reducing the hexavalent chromium emissions from electroplating or anodizing tank(s)" was removed because the language was unnecessary. The emissions will be reduced from the tank itself, and subsections (A) and (B) specify that hexavalent chromium emissions must be reduced as described in those subsections. "Chrome plating tank(s)" replaced "electroplating or anodizing tank(s)" to be consistent with the new terminology and to use defined terms.

The amendments to Subsection (B) are necessary to reduce the emission limit from 0.0015 mg/amp-hr to 0.00075 mg/amp-hour of hexavalent chromium for all functional plating facilities, which reduces by half the allowed emissions of hexavalent chromium from a modified facility. This is consistent with the more stringent emission limit applicable to all functional chrome plating facilities after to January 1, 2026, but modified facilities must meet this new limit earlier if they choose to modify their facility between January 1, 2024, and

January 1, 2026. Facilities undergoing a modification will need to apply for permits to modify their facility.

Purpose for Changes to Subsection (e)(3)

Subsection (e)(3) includes the requirement that was in subsection (c)(2) of the 2007 ATCM. The underline/strikethrough version of the regulatory text displays the language in section 93102.4(c)(2) of the 2007 ATCM in strikeout and all of the language in section 93102.4(e)(3) in underline since the text has been moved from section 93102.4(c)(2) to section 93102.4(e)(3). In addition to being moved, the language has undergone other amendments, which are described below. The language that was moved from subsection (c)(2) to subsection (e)(3) is depicted in underline/strikethrough below to demonstrate the changes to language from section (c)(2) of 2007 ATCM that was moved to subsection (e)(3) in the Proposed Amendments.

> ~~(2)~~(3) Prior to ~~i~~Initial ~~s~~Start-~~u~~Up of a ~~m~~Modified ~~f~~Facility, ~~when annual emissions of hexavalent chromium are expected to exceed 15 grams per year,~~ the ~~o~~Owner or ~~o~~Operator shall conduct a ~~s~~Site-~~s~~Specific ~~r~~Risk ~~a~~Analysis in accordance with the ~~permitting agency's~~District's procedures. The analysis shall be submitted to the ~~permitting agency~~District.

The Proposed Amendments capitalize defined terms, incorporate new terminology, and removes the following phrase: "when annual emissions of hexavalent chromium are expected to exceed 15 grams per year."

Rationale for Changes to Subsection 93102.4(e)(3)

This phrase was removed because the Proposed Amendments require a health risk assessment for all facilities that undergo a modification. The 2007 ATCM only required facilities that are expected to exceed 15 grams per year of hexavalent chromium emissions to perform a health risk assessment. However, it is important for all facilities that undergo a modification to perform a health risk assessment because there is no level below which there are no known health impacts. Due to the high level of toxicity of hexavalent chromium and the close proximity of facilities to sensitive receptors, conducting a health risk assessment for all modified facilities is important to understand the impacts from these facilities.

Purpose for Removal of Prior Section 93102.4(e)

Section 93102.4(e) of the 2007 ATCM has been removed from the Proposed Amendments. It required notification of construction reports for new and modified facilities to the District or compliance with the District's New Source Review requirements.

Rationale for Removal of Prior Section 93102.4(e)

The requirements regarding notification of construction reports that were included in section 93102.4(e) of the 2007 ATCM are no longer necessary. The construction reports are handled by the Districts through the authority to construct permitting process, so it is not necessary for them to be required by the Proposed Amendments.

Section 93102.4(f)

Purpose of Adding Section 93102.4(f)

Subsection 93102.4(f) was added to the Proposed Amendments to set forth the emission limitations applicable to Tier III tanks at functional plating facilities that are not chrome plating tanks.

Rationale for Adding Section 93012.4(f)

The addition of subsection (f) is necessary to set forth the specific requirements applicable to Tier III tanks at chrome plating facilities. Tier III tanks must meet more stringent requirements than are applicable to Tier II or Tier I tanks because they have the highest potential hexavalent chromium emissions due to their elevated operating temperature and hexavalent chromium concentration, use of air sparging for mixing, or application of electric current for the electrolytic process (see below for Purpose and Rationale for Appendix 9, which sets forth the thresholds applicable to Tier II and Tier III tanks).

It is necessary for the header of subsection (f) to specify that the requirements set forth in section (f) are only applicable to Tier III tanks that are not chrome plating tanks to clarify the extent of these requirements. While chrome plating tanks are a subset of Tier III tanks, they have their own requirements and emission limit specified in subsection 93102.4(b) and must meet different limits than other Tier III tanks. Note that the definition of Tier III tanks specifies that some Tier III tanks are chrome plating tanks and others are not (see above).

These limits only apply to functional chrome plating facilities because the Proposed Amendments prohibit the use of hexavalent chromium for decorative facilities starting January 1, 2027. As such, it would create additional unnecessary expense for decorative chrome plating facilities to make the modifications required to meet these limits when they are going to phase out hexavalent chromium entirely on January 1, 2027.

Purpose for Adding Subsection (f)(1)

Subsection (f)(1) requires that, beginning on July 1, 2024, and until the control device required in subsection (f)(2) has been installed, the entire surface area of the tank must be covered no later than 30 minutes after the tank ceases operation. Tank covers must be free of holes, tears, and gaps and made of a non-permeable and durable material such as metal or plastic.

Rationale for Adding Subsection (f)(1)

Subsection (f)(1) is necessary to reduce emissions from Tier III hexavalent chromium tanks that are not chrome plating tanks at functional plating facilities when they are not in operation by using a tank cover. It is necessary for this requirement to apply from July 1, 2024, until the control device has been installed pursuant to subsection (f)(2) to reduce emissions from the tanks in the interim period before the add-on pollution control device is installed. Staff selected the start date of July 1, 2024, to give facilities six months after the anticipated effective date of the Proposed Amendments (January 1, 2024), which provides sufficient time for the acquisition and installation of tank cover(s). It is necessary that the entire surface area

of the tank be covered by a tank cover that is free of holes, tears and gaps and is made of a non-permeable material to prevent fugitive emissions from escaping the tank. The tank must be covered no later than 30 minutes after the tank ceases operation to provide sufficient time for the employees to complete any tasks necessary prior to applying the tank cover while ensuring that the cover is applied promptly to reduce emissions.

Purpose for Adding Subsection (f)(2)

Subsection (f)(2) establishes hexavalent chromium emission limits applicable to Tier III tanks that contain hexavalent chromium but that are not chrome plating tanks beginning on January 1, 2026. These emissions must be collected and ventilated to an add-on air pollution control device that meets the emission limits set forth in subsections (A)–(C) as demonstrated by a source test conducted pursuant to the source test requirements set forth in section 93102.7.

Note: pursuant to section 93102.4(g)(2), the owner or operator may elect for Tier II tanks to comply with the emission limitations set forth in subsection (f)(2) instead of complying with section 93102.4(g)(1) (see below).

Rationale for Adding Subsection (f)(2)

Subsection (f)(2) is necessary to set forth the emission limits applicable to Tier III hexavalent chromium containing tanks that are not chrome plating tanks at functional chrome plating facilities. The requirements applicable to Tier III tanks are more stringent than those applicable to Tier II tanks because they have higher potential emissions due to their higher operating temperature and hexavalent chromium concentrations.

Functional chrome plating facilities have until January 1, 2026, to install or upgrade their control equipment to meet the limit for each Tier III tank that is not a chrome plating tank (see subsection (c)(2) for the limit applicable to chrome plating tanks starting on January 1, 2026). Staff selected an effective date for this requirement that is two years following the anticipated effective date of the Proposed Amendments (January 1, 2024) to provide sufficient time for the District to complete its review of applications for authority to construct and for facilities to install any new control equipment or upgrade their existing systems to achieve compliance.

It is necessary that these emissions be collected and ventilated to an add-on air pollution control device that meets the applicable limit to control emissions from these tanks. It is also necessary for the facility to demonstrate the limits are being met by conducting a source test as required by the Source Test Requirements section so that the District may verify that the emission limit is being met.

Purpose for Adding Subsection (f)(2)(A)

Subsection (A) sets a limit of 0.00075 mg/amp-hr of hexavalent chromium for any tanks connected to an add-on air pollution control device that is also connected to a chrome plating tank.

Rationale for Adding Subsection (f)(2)(A)

Subsection (A) is necessary to establish that non-chrome plating Tier III tanks must meet the more stringent emission limit of 0.00075 mg/amp/hr if they are connected to the same add-on air pollution control device as a chrome plating tank. This is because one control device can be used to control emissions from multiple Tier III tanks. It may be more cost effective to install one device for multiple tanks, and intake ducting can be run from multiple tanks to a control device that is sized for controlling those tanks. When multiple tanks are controlled by one device and one of those tanks is a chrome plating tank, the device must meet the emission limit of 0.00075 mg/amp-hr, which is consistent with the emission limit applicable to chrome plating tanks set forth in section 93102.4(c)(2) (see above).

Purpose for Adding Subsection (f)(2)(B)

Subsection (B) sets a limit of 0.20 mg/hr for any tanks that are not connected to the same add-on air pollution control device as a chrome plating tank is connected to, if the ventilation system has a maximum exhaust rate of 5,000 cubic feet per minute or less per manufacturer's specifications.

Rationale for Adding Subsection (f)(2)(B)

Subsection (B) requires that any non-chrome plating Tier III tank meet a limit of 0.20 mg/hr of hexavalent chromium if they are not connected to the same control device as a chrome plating tank(s) and if the control device has a flow rate of no more than 5,000 cubic feet per minute. This emission limit will be achieved through the installation of an add on control device. The use of a control device will reduce fugitive emissions by capturing previously uncontrolled emissions. This requirement is intended to protect human health by reducing fugitive emissions in the interim period prior to the functional plating phase out. The limit is achievable using currently available control technology and has been shown to reduce ambient concentrations of hexavalent chromium outside of chrome plating facilities in South Coast AQMD.

The units are in mg/hr instead of mg/amp-hr because Tier III tanks that are not chrome plating tanks do not have electrical current flowing through them and therefore cannot be required to meet an emission limit that is based on electrical current (amperes). These tanks emit continuously and therefore have an emission limit that is based on milligrams per hour.

Purpose for Adding Subsection (f)(2)(C)

Subsection (C) sets a limit of 0.004 mg/hr-ft^2 for all tanks that are not connected to the same add-on air pollution control device as a chrome plating tank is connected to, if the ventilation system has a maximum exhaust rate of greater than 5,000 cubic feet per minute per manufacturer's specification.

Subsection (C)1. explains that the applicable surface area is based on the total surface area of all Tier III tank(s) connected to the same add-on air pollution control device. Note that all of these subsections (and all of the rest of section (f)) only apply to Tier III tanks that are not chrome plating tanks at functional chrome plating facilities (and Tier II tanks that elect to comply with this requirement instead of complying with section 93102.4(g)(1) pursuant to

section 93102.4(g)(2), see below).

Rationale for Adding Subsection (f)(2)(C)

Subsection (C) requires that any non-chrome plating Tier III tank meet a limit of 0.004 mg/hr-ft^2. This requirement only applies to tanks that are not connected to the same control device as a chrome plating tank(s) if the control device has a maximum flow rate of greater than 5,000 cubic feet per minute. This emission limit will be achieved through the installation of an add-on control device. The use of a control device will reduce fugitive emissions by capturing previously uncontrolled emissions. This requirement is intended to protect human health by reducing fugitive emissions in the interim period prior to the functional plating phase out. The limit is achievable using currently available control technology that have been shown to reduce ambient concentrations of hexavalent chromium outside of chrome plating facilities in South Coast AQMD.

This limit is different from the one in subsection (f)(2)(B) because a larger fan size will typically be used when there are larger tanks or many tanks operating with a specific add-on air pollution control device. The limit of 0.2 mg/hr in subsection (f)(2)(B) corresponds to a tank with a surface area of 50 square feet. If the tank were to increase above 50 square feet, at some point a fan with a greater flow rate would have to be installed for functional purposes. Because of this, the emission limit would need to increase proportionally to the square footage of the tank. For example, if two 50 square foot Tier III tanks are operating separately, each with their own add-on control device, they would each be required to meet an emission limit of 0.2 mg/hr. This is equivalent to one 100 square foot tank meeting an emission limit of 0.4 mg/hr. Using a larger add-on air pollution control device and allowing the two tanks to meet an emission limit of 0.4 mg/hr would achieve the same level of emission control and would potentially save money for the facility as the cost of installing and operating one larger air pollution control device could be less than two smaller units. The 0.4 mg/hr emission rate in this case would be achieved by multiplying the 0.004 mg/hr-ft^2 by 100 square feet (the sum of surface area of two 50-square-foot tanks).

The units are in mg/hr-ft^2 instead of mg/amp-hr because Tier III tanks that are not chrome plating tanks do not have electrical current flowing through them and therefore cannot be required to meet an emission limit that is based on electrical current (amperes). These tanks emit continuously and therefore have an emission limit that is based on milligrams per hour.

Subsection (C)1. is necessary to clarify that the surface area that the 0.004 mg/hr-ft^2 standard applies to must be calculated based on the total surface area of all Tier III tanks connected to the same control device.

Purpose for Adding Subsection (f)(3)

Subsection (f)(3) provides an exemption from the emission limits in subsection (f)(2), which applies to tanks for which the owner or operator demonstrates to the District that the uncontrolled hexavalent chromium emission rate of the tank is less than 0.20 mg/hr. Note that this only applies to uncontrolled tanks, so it does not apply to tanks that are controlled by an add-on air pollution control device. The owner or operator must demonstrate that the emissions are less than 0.20 mg/hr by a source test approved by the District according to the

requirements set forth in the Source Test section.

Rationale for Adding Subsection (f)(3)

Subsection (f)(3) is necessary because, if a facility can demonstrate that a non-chrome plating Tier III tank has an uncontrolled emission rate of less than 0.20 mg/hr, they already meet the emission limit in subsection (f)(2)(B), and no further action is necessary to comply with subsection (f)(2). This exemption applies to subsection (f)(2), so the facility would still have to comply with the tank cover requirements in subsection (f)(1) for tanks that are exempted pursuant to this subsection.

Purpose for Adding Subsection (f)(4)

Subsection (f)(4) sets forth the permitting process for non-chrome plating Tier III tanks at functional chrome plating facilities.

Rationale for Adding Subsection (f)(4)

Subsection (f)(4) is necessary to establish the permitting process for add-on air pollution control devices that collect and ventilate hexavalent chromium emissions from Tier III tanks that are not chrome plating tanks at functional chrome plating facilities.

The subsections that follow use the terms "authority to construct" and "permit to operate," which are the terms used by Districts to describe two different types of permits. An authority to construct is a permit issued by the District granting permission to install a new device or modify an existing device that is subject to the District's rules. The authority to construct is issued prior to the beginning of any construction operations and after the District determines that all applicable rules are expected to be complied with. The authority to construct outlines any initial conditions that must be met prior to the issuance of a permit to operate. The permit to operate is a permit granting permission for the newly installed or modified device to operate within the applicable limits and in compliance with all applicable rules. A permit to operate is only issued after all construction is complete and all initial conditions specified by the authority to construct are met.

Purpose for Adding Subsection (f)(4)(A)

Subsection (A) requires the owner or operator to apply to the District for an authority to construct by January 1, 2025, for any add-on air pollution control device to be used on any non-chrome plating Tier III tank.

Rationale for Adding Subsection (f)(4)(A)

Subsection (A) is necessary because the owner or operator must apply for a permit for the air pollution control device prior to January 1, 2025, to be able to complete the permitting and installation of the add-on air pollution control device needed to meet the more stringent emission limit that takes effect on January 1, 2026.

Purpose for Adding Subsection (f)(4)(B)

Subsection (B) requires the owner or operator to conduct a source test on all non-chrome plating Tier III tanks demonstrating that the applicable emission limit is satisfied. Subsection

(B)1. provides that, for non-chrome plating Tier III tanks that are connected to the same control device as a chrome plating tank, the source test must be performed during the operation of the chrome plating tank.

Rationale for Adding Subsection (f)(4)(B)

Subsection (B) is necessary to require a source test that will ensure that the control device is meeting the required limits prior to the issuance of the permit. Subsection (B)1. is necessary because, for non-chrome plating Tier III tanks that are connected to the same control device as chrome plating tank(s), the source test must be conducted during the operation of the chrome plating tank to ensure that the results take into account the emissions that occur during operation of the chrome plating tank.

Purpose for Adding Subsection (f)(4)(C)

Subsection (C) requires the owner or operator to submit to the District an application for a permit to operate the tanks that includes the results of the source test.

Rationale for Adding Subsection (f)(4)(C)

Subsection (C) is necessary because the owner or operator must submit an application to the District for a permit to operate the tank(s) that includes the results of the source test so that the District can evaluate whether to issue the permit.

Purpose for Adding Subsection (f)(4)(D)

Subsection (D) provides that the District shall not issue a permit to operate unless the source test demonstrates that the applicable emission limit is satisfied.

Rationale for Adding Subsection (f)(4)(D)

Subsection (D) is necessary because the District may issue a permit to operate the tank(s) only if the sources test demonstrates that the tank(s) satisfy the applicable requirements.

Section 93102.4(g)

Purpose for Adding Section 93102.4(g)

Section 93102.4(g) was added to set forth the requirements to control hexavalent chromium emissions from Tier II tanks at functional chrome plating facilities.

Rationale for Adding Subsection 93102.4(g)

Section 93102.4(g) is necessary to set forth requirements to reduce hexavalent chromium emissions from Tier II tanks at functional chrome plating facilities. Tier II tanks need additional controls that are not as stringent as Tier III tanks because they operate at lower temperatures, lower hexavalent chromium concentrations, do not use air sparging for mixing, and are not electrolytic tanks. On the other hand, Tier II tanks have more stringent requirements than apply to Tier I tanks because Tier II tanks operate at a higher temperature

and hexavalent chromium concentration than Tier I tanks and have higher potential hexavalent chromium emissions.

Purpose for Adding Subsection (g)(1)

Subsection (g)(1) becomes effective July 1, 2024, and requires the use of a tank cover, a mechanical fume suppressant, or another method approved by the District to control hexavalent chromium emissions from Tier II tanks. If a tank cover is used, the entire surface area of the tank must be covered no later than 30 minutes after operations of the tank are complete. Tank covers must be free of holes, tears, and gaps and must be made of a non-permeable and durable material such as metal or plastic.

Rationale for Adding Subsection (g)(1)

Subsection (g)(1) is necessary to require the owner or operator to control emissions of hexavalent chromium by using a tank cover or mechanical fume suppressant. The Districts may approve of another method in accordance with their procedures. It is necessary to allow the District to approve another method that will reduce emissions of hexavalent chromium from Tier II tanks because there may be other methods that are as effective as a tank cover or mechanical fume suppressant, and it is not feasible to anticipate all possible control options. The start date of July 1, 2024, was selected because it gives facilities six months after the anticipated effective date of the Proposed Amendments (January 1, 2024), which provides sufficient time for the acquisition and installation of tank cover(s) or mechanical fume suppressant(s).

It is necessary that the entire surface area of the tank be covered by a tank cover that is free of holes, tears, and gaps and is made of a non-permeable material to restrict fugitive emissions from escaping the tank. The tank must be covered no later than 30 minutes after the tank ceases operation to provide sufficient time for the employees to complete any tasks necessary prior to applying the tank cover while ensuring that the cover is applied promptly to reduce emissions.

Purpose for Adding Subsection (g)(2)

Subsection (g)(2) allows the owner or operator to control emissions of hexavalent chromium from a Tier II tank by complying with the emission limitations set forth in section 93102.4(f)(2) (see above).

Rationale for Adding Subsection (g)(2)

Subsection (g)(2) allows the owner or operator to follow the control requirements set forth in subsection (f)(2) instead of complying with subsection (g)(1). This option can be utilized at any time on or after January 1, 2026, in lieu of compliance with subsection (g)(1), at the owner or operator's discretion. This option is provided because the requirements in subsection (f)(2) set forth emission limits that will reduce fugitive emissions sufficiently to replace the requirements set forth in section subsection (g)(1). For example, if an add-on air pollution control device is already being installed for a Tier III tank, an owner or operator may prefer to comply with subsection (f)(2) by adding a collection system to the Tier II tank as well instead

of complying with subsection (g)(1) by using a tank cover, mechanical fume suppressant, or other method approved by the District. Also, depending on how often the tank is used, the facility may prefer to use an add-on control device that complies with subsection (f)(2) rather than a tank cover that complies with subsection (g)(1). This provides flexibility for owners and operators while ensuring that reductions will be achieved through compliance with the emission limitations in subsection (f)(2).

6. § 93102.5 Additional Requirements that Apply to all Chrome Plating Facilities that Use Hexavalent Chromium

Purpose for Overarching Amendments to Section 93102.5

Section 93102.5 sets forth the requirements that apply to all facilities using hexavalent chromium for chrome plating. This section is being significantly amended. The title was changed from "requirements that apply to existing, modified, and new hexavalent chromium plating or chromic acid anodizing facilities beginning October 24, 2007" to "additional requirements for chrome plating facilities that use hexavalent chromium." The introductory text that followed the title, which said, "Each owner or operator of a hexavalent chromium plating or chromic acid anodizing facility shall comply with the following requirements on or after the dates specified below," was changed to "This section sets forth requirements that apply to all facilities using hexavalent chromium for chrome plating operations."

Subsections (a) and (b) have been revised. Subsection (c) was expanded to include new housekeeping requirements. Subsection (d) has been added to include additional best management practices.

Rationale for Overarching Amendments to Section 93102.5

The amendments to section 93102.5 were necessary to update to new terminology and to incorporate enhanced housekeeping requirements and best management practices into the Proposed Amendments.

The title was updated add the word "additional" to distinguish the title of section 93102.5 from the title of section 93102.4. The phrase "that apply to existing, modified, and new hexavalent chromium plating or chromic acid anodizing facilities" was changed to "for chrome plating facilities" to incorporate new terminology and more succinctly describe the universe of facilities to which section 93102.5 applies. The effective date of October 24, 2007, in the title of section 93102.5 in the 2007 ATCM was removed from the Proposed Amendments since it has passed.

The introductory text was changed because the individual subsections specify the effective date applicable to the requirements. It now specifies that the requirements apply to all facilities using hexavalent chromium for chrome plating operations to clarify the applicability of these requirements. Because section 93102.5 only applies to facilities using hexavalent chromium, chrome plating facilities will not need to meet these requirements once they have removed hexavalent chromium from their operations.

Section 93102.5(a)

Purpose for Changes to Section 93102.5(a)

Subsection (a) was amended to remove the past effective date of October 24, 2007. The phrase "on a hexavalent chromium containing tank" was added and the language after "unless" was turned into a list. Removing or rendering inoperable a control device is prohibited unless one of the three provisions in the list are applicable.

Subsection (1) replaced the phrase "an emission rate of 0.0015 milligrams per ampere-hour or less" with "the emission rate applicable to the tank(s)." Subsection (2) updated the reference from section 93102.4(b)(3) to section 93102.14, the Alternative Compliance Method section. Subsection (3) was added to say, "the hexavalent chromium containing tank is being removed or taken out of service."

Rationale for Changes to Section 93102.5(a)

The past date of October 24, 2007, was removed because it is moot. The phrase "on a hexavalent chromium containing tank" was added to clarify that this requirement only applies to hexavalent chromium containing tanks (not trivalent chromium tanks). It was necessary to update subsection (a)(1) because the 0.0015 mg/amp-hr emission limit is being amended, and the device needs to be updated to meet the emission limit applicable to the tank(s) at issue. The "(s)" in "tank(s)" is necessary because some control devices are connected to multiple tanks.

It was necessary to update the reference in subsection (a)(2) because the requirements related to alternative methods of compliance that were in subsection (b)(3) of the 2007 ATCM have been moved to section 93102.14 for organization and readability (see above). Subsection (a)(3) was added to allow the removal or rendering inoperable of a control device if the tank it is controlling is being removed from the facility or taken out of service. This is necessary because control devices may need to be removed or rendered inoperable if the tank it was connected to is being removed or taken out of service.

Section 93102.5(b)

Purpose for Changes to Subsection 93102.5(b)

The amendments to subsection (b) remove the phrase "no later than October 24, 2009, and within every two years thereafter," and add "every two years" at the end. The Proposed Amendments replace the phrase "pertaining to chromium plating and chromic acid anodizing" with "on chrome plating" and change "Air Resources Board (ARB)" to "CARB."

Rationale for Changes to Subsection 93102.5(b)

It is necessary to remove the past compliance date from the Proposed Amendments because the compliance training is already in effect and will continue going forward. The phrase "within every two years thereafter" was replaced with "every two years" at the end to improve clarity and readability while maintaining the requirement to complete the training every two years. This ensures that individuals retake the training course and refresh their knowledge of the applicable requirements. "Pertaining to" was replaced with "on" for

succinctness and readability. “Air Resources Board (ARB)” was replaced with “CARB” because the acronym is now defined in the definitions section (see above).

Purpose for Changes to Subsection 93102.5(b)(1)

Subsection (b)(1) was amended to remove the effective date of October 24, 2009. The phrase “only by” was replaced by “under the supervision of.” The phrase “on chrome plating and who are onsite” was added to the end.

Rationale for Changes to Subsection 93102.5(b)(1)

Subsection (b)(1) was amended to remove the past compliance date because the date has passed. The phrase “only by” was replaced with “under the supervision of” because many environmental compliance requirements have been added to the Proposed Amendments, and an employee who has not conducted the training may participate in the compliance and recordkeeping process if they are under the supervision of a person who has completed the training and who is onsite when the employee is performing the environmental compliance and recordkeeping requirements. For example, an employee who has not taken the training may engage in the weekly housekeeping requirements as long as they are acting under the supervision of a person who is onsite and has taken the training. The phrase “on chrome plating” was added to the end to clarify which training course is required and for consistency with the language used in subsection (b). The phrase “and are onsite” was added to the end for consistency with subsection (b) and to ensure that the person who took the training and is supervising environmental compliance and recordkeeping is onsite so that they can ensure that the tasks are completed correctly based on their training.

Purpose for Amendments to Subsection (b)(2)

Subsection (b)(2) was amended to replace the words “class” with “course” and “may” with “shall.” The word “supervising” was added, and the “sub” in “subsection” was removed.

Rationale for Amendments to Subsection (b)(2)

The word “class” was replaced with “course” for consistency with the term used in subsection (b). The word “may” was replaced with “shall” because it is required that the owner or operator take over responsibility for supervising environmental compliance and recordkeeping if all persons who have completed the course are no longer associated with the facility. This change is necessary to clarify that this is a requirement and is not discretionary. The word “supervising” was added for consistency with subsection (b) and (b)(1). An employee who has not conducted the training may participate in the compliance and recordkeeping process as long as they are acting under the supervision of the owner or operator in the event that subsection (b)(2) applies. The “sub” was removed from “subsection” to be consistent with formatting, which uses “section” when the full section number is provided.

Purpose for Changes to Subsection (b)(3)

Subsection (b)(3) was only changed to replace “pursuant to Rule 1469” with “on chrome plating.”

Rationale for Changes to Subsection (b)(3)

This change was necessary to clarify the provision, which can be used by facilities within or outside the jurisdiction of South Coast AQMD. All chrome plating facilities may elect to comply with the environmental compliance training requirement by completing the South Coast AQMD environmental compliance training, even if they are not within South Coast AQMD's jurisdiction and regardless of whether they are subject to Rule 1469.

Purpose for Removal of Prior Subsection (b)(4)

This subsection was removed from the Proposed Amendments.

Rationale for Removal of Prior Subsection (b)(4)

This subsection was removed because it was not necessary. Section 93102.59(b) does not prevent other provisions in the Proposed Amendments from applying, so it is not necessary to specifically say that the other requirements still apply.

Section 93102.5(c)

Purpose for Changes to Section 93102.5(c)

Subsection (c) was amended to incorporate new enhanced housekeeping requirements, which will become effective upon the effective date of the Proposed Amendments. This section was amended to remove the sentence: "Effective April 24, 2008, housekeeping practices shall be implemented to reduce potential fugitive emissions of hexavalent chromium. At a minimum, the following practices shall be implemented."

Subsections (c)(1) and (c)(2) were not substantively changed; they were only changed to capitalize defined terms and incorporate new terminology.

Subsection (c)(3) is similar to the requirement in the 2007 ATCM subsection (c)(3). The phrase "Clean, using an approved cleaning method, or contain, using a drip tray or other containment device," was added to replace the phrase "shall be cleaned up or contained."

Rationale for Changes to Section 93102.5(c)

Subsection (c) sets forth the updated housekeeping requirements. They are intended to further reduce fugitive emissions of hexavalent chromium from chrome plating operations by making sure material containing hexavalent chromium is cleaned in a timely and efficient manner and is properly disposed of. Hexavalent chromium can be released in the form of liquids or solids, such as dust. For example, mists containing hexavalent chromium can released from the plating tank and emitted into the air when bubbles burst at the surface of the tank. Hexavalent chromium can also be released from drips when the pieces are lifted from the tanks and transferred. The hexavalent chromium released in mists, drips, and spills can settle onto the equipment, surfaces, and floors, where they dry and form dust that can eventually be released into outdoor air through building openings and vents. Dust can also absorb hexavalent chromium liquid and act as a vessel for fugitive emissions when the dust is is released from the facility.

These housekeeping requirements are set to go into effect upon the effective date of the

Proposed Amendments. Since these are housekeeping requirements and do not require installation of control technology or construction of building enclosures, facilities should be able to incorporate these requirements into their operations by the effective date of the Proposed Amendments. Similar housekeeping requirements are already in effect in South Coast AQMD in Rule 1469 subsection (f).

Subsection (c)(3) includes similar requirements to the 2007 ATCM. It is necessary that spills of any material that may contain hexavalent chromium (such as chromic acid flakes or hexavalent chromium liquid) be cleaned within one hour after being spilled to reduce the risk of fugitive emissions. These changes add specificity and clarity to the methods required to clean up or contain spills. It incorporates the defined term "approved cleaning method" for clarity, as the definition of this term specifies the permissible methods that can be used for cleaning spills (see Purpose and Rationale for the definition above). Spills can also be contained using a drip tray or other containment device.

Purpose for Move of Prior Section 93102.5(c)(4) to Section 93102.5(d)(1)

The requirements related to dragout that were in section 93102.5(c)(4) in the 2007 ATCM have been moved to section 93102.5(d)(1) in the Proposed Amendments.

Rationale for Move of Prior Section 93102.5(c)(4) to Section 93102.5(d)(1)

The dragout requirements were moved from subsection (c)(4) of the 2007 ATCM to subsection (d)(1) in the Proposed Amendments to improve organization because the requirements related to dragout are better classified as best management practices, which are included in subsection (d), rather than housekeeping requirements, which are included in subsection (c) (see below).

Purpose for Changes to Subsection (c)(4)

Subsection (c)(4) was renumbered from subsection (c)(5) of the 2007 ATCM. It was amended to add the phrase at the beginning "clean weekly, using an approved cleaning method, the following:" instead of the phrase "that accumulates or potentially accumulates dust shall be cleaned at least once every seven days." The Proposed Amendments incorporate the defined term "approved cleaning method" instead of the phrase at the end of subsection (c)(5) of the 2007 ATCM "in one or more of the following manner: HEPA vacuumed, or hand wiped with a damp cloth, or wet mopped, or otherwise cleaned as approved by the permitting agency, or shall be maintained with the use of non-toxic chemical dust suppressants" (see Purpose and Rationale for definition of approved cleaning method, above).

The areas required to be cleaned in subsection (c)(5) of the 2007 ATCM are included in list format in subsections (A)–(D) of the Proposed Amendments instead of stating them in paragraph format. Subsection (A) was only changed to capitalize defined terms. Subsection (B) was changed from saying "open floor areas" to "floors in the tank process area." Subsection (B) was amended to change "electroplating or anodizing tanks" to "Tier I, Tier II, or Tier III tank(s)." Subsection (D) was added to require weekly cleaning of surfaces in the building enclosure or tank process area. Subsection (E) was changed to add "other" and to capitalize defined terms. As indicated above, the language at the end of subsection (c)(5) of

the 2007 ATCM was removed and replaced with the introductory language in subsection (c)(4) of the Proposed Amendments.

Rationale for Changes to Subsection (c)(4)

Subsection (c)(4) is necessary to require weekly cleaning of areas that are likely to be contaminated with hexavalent chromium. For example, hexavalent chromium dust that accumulates on the floors of the tank process area could become entrained in the air and escape through an open door into the community.

The use of the defined term "approved cleaning methods" instead of listing out the various types of cleaning methods that are permissible improves readability and clarity regarding the type of cleaning methods that will satisfy this requirement (see the Purpose and Rationale for the definition of "approved cleaning methods"). The areas included in subsections (A)–(E) are likely to be contaminated by hexavalent chromium and need to be cleaned weekly to reduce fugitive emissions. Cleaning hexavalent chromium liquid or dust that accumulates on surfaces, floors, and walkways weekly using an approved cleaning method will reduce the release of fugitive emissions into the surrounding community.

Subsection (A) was only changed to capitalize defined terms. Subsection (B) was changed from "open floors" to "floors in the tank process area" to improve clarity and specificity by incorporating the defined term "tank process area" (see above Purpose and Rationale for definition of "tank process area"). Subsection (C) was changed from "the electroplating or anodizing tank(s)" to "Tier I, Tier II, or Tier III Tank(s)" because the housekeeping requirements should apply to all Tier I, Tier II, and Tier III tanks, not just chrome plating tanks. Tier I, II, and III tanks all contain hexavalent chromium by definition (see above Purpose and Rationale for definitions of hexavalent chromium). Fugitive dust contaminated with hexavalent chromium could accumulate in walkways around these tanks and lead to fugitive emissions if they are not cleaned regularly. Subsection (D) was added because surfaces in the building enclosure surrounding hexavalent chromium tanks and in the tank process area could be contaminated with hexavalent chromium dust, which needs to be cleaned regularly to reduce emissions of fugitive dust. The word "other" was added to subsection (E) to improve clarity by requiring that any surfaces other than those listed in subsections (A)–(D) that are potentially contaminated with hexavalent chromium be cleaned weekly using an approved cleaning method. This ensures that the requirement captures any other surfaces that may be contaminated with hexavalent chromium laden dust that could escape into the surrounding community if not cleaned properly.

Purpose for Move of Section 93102.5(c)(6) to Subsection (d)(4)(A)

The requirements regarding buffing, grinding or polishing areas being separated by a physical barrier that are in section 93102.5(c)(6) of the 2007 ATCM have been moved to section 93102.5(d)(4)(A) of the Proposed Amendments (see below). Note: the underline/strikethrough version of the Proposed Amendments shows this requirement as stricken out in subsection (c)(6) and underlined in subsection (d)(4)(A).

Rationale for Move of Section 93102.5(c)(6) to Subsection (d)(4)(A)

Section 93102.5(c)(6) was moved to section 93102.5(d)(4)(A) because separating buffing, grinding, or polishing areas from chrome plating operations using a physical barrier is better characterized as a best management practice than a housekeeping requirement (see below). This move improves organization by placing the buffing, grinding, and polishing requirements in subsection (d) along with the other the best management practices rather than subsection (c), which includes the housekeeping requirements.

Purpose for Changes to Subsection (c)(5)

Subsection (c)(5), which was renumbered from section (c)(7) of the 2007 ATCM, requires the storage, disposal, recovery, or recycling of chromium wastes generated by the housekeeping activities in subsection (c) in a way that does not lead to fugitive emissions. It also requires containers with chromium-containing waste material to be kept closed at all times, except when being filled or emptied, and be stored in an enclosed storage area.

Rationale for Changes to Subsection (c)(5)

Subsection (c)(5) is necessary to prevent the storage, disposal, recovery, and recycling of hexavalent chromium and hexavalent chromium containing wastes generated by the housekeeping requirements in subsection (c) using practices that do not lead to fugitive emissions. This protects communities by reducing fugitive emissions of hexavalent chromium wastes generated by housekeeping into the surrounding community. Containers with chromium-containing waste material must be kept closed at all times except when being filled or emptied and shall be stored in an enclosed storage area in order to prevent spills and other accidental releases.

Purpose for Adding Subsection (c)(6)

Subsection (c)(6) requires the use of an approved cleaning method to clean floors within a 20-foot radius of any buffing, grinding, or polishing area at the end of any day that buffing, grinding, or polishing activities took place.

Rationale for Adding Subsection (c)(6)

Subsection (c)(6) is necessary because buffing, grinding, and polishing creates significant amounts of dust. This dust can be transferred from the buffing, grinding, and polishing area to other areas in the facility, where it could come into contact with hexavalent chromium containing liquids. The dust could carry hexavalent chromium outside of the facility if it is not cleaned using an approved cleaning method.

Purpose for Adding Subsection (c)(7)

Subsection (c)(7) requires the storage of the following materials in a closed container or in an enclosed storage area: (A) cleaning equipment and supplies for housekeeping when they are not in use; (B) reusable tank covers used for Tier I, II or III tanks when not on the tank; (C) reusable hangers used for placing parts into a Tier II, II or III tank unless they are being used to hold a part; (D) anodes and cathodes used in Tier I, II or III tanks when they are not in the tank.

Rationale for Adding Subsection (c)(7)

Subsection (c)(7) is necessary to require the storage of the listed materials in a closed container or an enclosed storage area. Subsections (A)–(D) list the materials for which proper storage is required because these materials come into direct contact with hexavalent chromium containing liquids and therefore must be stored properly, or they create a risk of fugitive emissions. These materials include housekeeping equipment and supplies, reusable tank covers, reusable hangers, and anodes and cathodes used with Tier I, II or III tanks. It is necessary to specify that these materials need only be properly stored when they are not in use so that the requirement allows for normal operations.

Section 93102.5(d)

Purpose for Adding Section 93102.5(d)

This subsection was added to the Proposed Amendments to set forth best management practices.

Rationale for Adding Section 93102.5(d)

The addition of subsection (d) is necessary because the Proposed Amendments require best management practices to reduce fugitive emissions of hexavalent chromium. The best management practices become effective July 1, 2024, six months after the anticipated effective date of the Proposed Amendments (January 1, 2024), to provide facilities time to incorporate these requirements into their operations. However, section 93102.5(d)(4)(B), which requires buffing, grinding, and polishing operations to be conducted within a building enclosure, goes into effect on January 1, 2026, along with other building enclosure requirements.

Purpose for Move from Section 93102.5(c)(4) to Subsection (d)(1)

Subsection (d)(1) sets forth the requirements to minimize dragout from Tier I, II and III tanks starting July 1, 2024. These requirements were moved from section 93102.6(c)(4) of the 2007 ATCM to section 93102.6(d)(1) of the Proposed Amendments and amended, as discussed below.

Rationale for Move from Section 93102.5(c)(4) to Subsection (d)(1)

The requirements pertaining to minimizing dragout set forth in section 93102.5(c)(4) of the 2007 ATCM were moved to section 93102.4(d)(1) to improve organization. Section 93102.5(c) sets forth housekeeping requirements; section 93102.5(d) sets forth best management practices. The requirements for minimizing dragout are more properly characterized as best management practices rather than housekeeping requirements and have therefore been moved to the best management practices in subsection (d).

Purpose for Changes from Section 93102.14(c)(4) to Subsection (d)(1)

The underline/strikethrough version of the regulatory text displays the language in section 93102.5(c)(4) of the 2007 ATCM in strikeout and all the language in section 93102.5(d)(1) in underline since the text has been moved from section 93102.5(c)(4) to section 93102.5(d)(1). In addition to being moved, the language has undergone other

amendments. The language that was moved from subsection (c)(4) to subsection (d)(1) are depicted in underline/strikethrough below to demonstrate the changes to language from the 2007 ATCM that was moved to subsection (d)(1) in the Proposed Amendments. The underline/strikethrough language provided below is intended to assist the reader in analyzing changes from the 2007 ATCM to the Proposed Amendments that have been made to provisions that were moved. This should serve as a supplementary reference since the underline strikethrough version of the regulatory text does not display these changes.

(1) *Minimizing Dragout.* Beginning July 1, 2024, Dragout from ~~the tank(s)~~Tier I, Tier II, and Tier III Tanks shall be minimized by ~~implementing~~containing the ~~following practices~~liquid as follows:

The Proposed Amendments add the header "*Minimizing Dragout,*" the phrase "beginning July 1, 2024," and replaced "the tank(s)" with "Tier I, Tier II, or Tier III tanks." The words "implementing" and "following practices" were replaced with "containing" and "liquid as follows."

The requirements for containing the liquid dragout from a Tier I, II or III tank are broken down by automatic and non-automatic lines.

Rationale for Changes from Section 93102.5(c)(4) to Subsection (d)(1)

Subsection (d)(1) specifies best management practices for minimizing dragout. Dragout is defined as the fluid containing hexavalent chromium that adheres to parts when they are removed from the tank (see above). Dragout can drip from a base material, or equipment used to handle base material, when it is removed from the tank and transferred to the next process step. If dragout drips outside of the tanks, this hexavalent chromium laden liquid can be released as fugitive emissions. Subsection (d)(1) is applicable starting on July 1, 2024, so that facilities will have six months following the anticipated effective date of the Proposed Amendments to implement these requirements.

The header "*Minimizing Dragout*" was added to improve readability and organization and for consistency with the other subdivisions, which include headers to help guide the reader. The effective date of July 1, 2024, was added to provide facilities six months following the anticipated effective date of the Proposed Amendments to acquire and install drip trays or other necessary containment devices. "Tier I, Tier II, or Tier III Tanks" replaced "the tank(s)" to improve clarity by specifying that this requirement applies to all Tier I, Tier II, or Tier III tanks. The words "implementing" and "following practices" were replaced with "containing" and "liquid as follows" to improve clarity and precision since subsections (A) and (B) set forth requirements to minimize dragout by containing the liquid.

Purpose for Changes from Subsection (c)(4)(A) to Subsection (d)(1)(A)

Subsection (d)(1)(A) applies to automated lines and requires the installation of a drip tray or other similar containment device between Tier I, Tier II, or Tier III tanks. The tray needs to capture the liquid so that it does not fall through the space between the tanks.

The language in subsection (d)(1)(A) was moved from section (c)(4)(A) in the 2007 ATCM and has been amended as follows:

(A) ~~Facilities with f~~For automated lines~~.:~~ ~~D~~drip trays, or other containment devices, shall be installed between ~~tanks~~Tier I, Tier II, or Tier III Tanks ~~so~~ such that liquid does not fall through the space between ~~t~~Tanks. ~~Trays shall be placed such that the liquid is returned to the tank(s).~~

The words "facilities with" was replaced with "for," and "tanks" was replaced with "Tier I, Tier II, or Tier III tanks." The phrase "or other containment devices" was added, and the following sentence was removed: "Trays shall be placed such that the liquid is returned to the tank(s)."

Rationale for Changes from Subsection (c)(4)(A) to Subsection (d)(1)(A)

Subsection (A) is necessary to establish the requirements for minimizing dragout for automated lines. The changes from subsection (c)(4)(A) to subsection (d)(1)(A) improve clarity. The words "facilities with" was replaced with "for" to clarify that process lines that are automated must comply with this requirement. This clarification is necessary because some facilities may have process lines that are automated and some that are non-automated, and they must comply with the requirements applicable to each type of process line. The phrase "or other containment device" was added to allow facilities to use a type of containment device that is not a drip tray, as long as it captures the liquid such that it does not fall through the space between tanks, to provide flexibility to facilities in selecting the containment device that best fits their equipment. The use of the defined terms "Tier I, Tier II or Tier III tanks" were added to improve clarity by specifying the types of tanks this requirement applies to. The sentence requiring trays to be placed such that the liquid is returned to the tanks has been removed and replaced by the requirement set forth in subsection (C) of the Proposed Amendments (see below).

The term "automated lines" is commonly known by industry to mean a plating line in which a crane or hoist systems moves the base materials from tank to tank without the need for an operator to physically move parts from tank to tank. For automated lines, drip trays or another containment device must be installed between the Tier I, II and III tanks such that liquid does not fall through the space between tanks. The term "drip trays" is commonly known by industry to mean a collection tray into which hexavalent chromium containing liquid drips, usually from the base material or from the equipment used to dip the base material into the tank. It is important for the liquid to be returned to the tanks to reduce the risk that the liquid can splash outside of the drip tray or otherwise be spilled onto the floor of the facility. It is necessary to clean them weekly to keep them free of dust or residue because dust can absorb hexavalent chromium containing liquids and act as a carrier for fugitive emissions of hexavalent chromium that can be released into the surrounding communities.

Purpose for Changes from Subsection (c)(4)(B) to (d)(1)(B)

Subsection (d)(1)(B) of the Proposed Amendments applies to non-automated lines and requires that each base material and piece of equipment that handles these parts be used in a way that prevents the dripping of liquid outside of the hexavalent chromium tank, unless the liquid is captured by drip tray or other a containment device.

The following underline/strikethrough demonstrates changes to the language in subsection (c)(4)(B) of the 2007 ATCM compared to the language in subsection (d)(1)(B) of the Proposed Amendments:

(B) ~~*Facilities without*~~ For non-automated lines~~.~~: ~~1. Each electroplated or anodized part~~ each Base Material and equipment used to handle the Base Material must be handled so that liquid containing chromium or ~~c~~Chromic ~~a~~Acid is not dripped outside the ~~electroplating t~~Tank~~.~~, unless the liquid is captured by a drip tray or other containment device. ~~2. Each facility spraying down parts over the electroplating or anodizing tank(s) to remove excess chromic acid shall have a splash guard installed at the tank to minimize overspray and to ensure that any hexavalent chromium laden liquid is returned to the electroplating or anodizing tank.~~

The words "facilities without automated lines" were replaced by "for non-automated lines." The organization of subsection (c)(4)(B) was changed so that there are no longer subsections 1. and 2. "Each electroplated or anodized part" was changed to "each base material" and "electroplating tank" was changed to "tank." The following phrases were added: "and equipment used to handle the base material" and ", unless the liquid is captured by a drip tray or other containment device." The requirement in subsection (c)(4)(B)2. of the 2007 ATCM requiring splash guards when spraying down parts was moved to subsection (d)(2)(A)1. (see below).

Rationale for Changes from Subsection (c)(4)(B) to (d)(1)(B)

Subsection (d)(1)(B) is necessary to establish the requirements for minimizing dragout for non-automated plating lines. The changes from subsection (c)(4)(B) of the 2007 ATCM to subsection (d)(1)(B) of the Proposed Amendments improve clarity. "Facilities without automated lines" was replaced by "for non-automated lines" because some facilities may have process lines that are automated and some that are non-automated, and they must comply with the requirements applicable to each type of process line. "Each electroplated or anodized part" was changed to "each base material" and "electroplating tank" was changed to "tank" for consistency and to incorporate the defined terms. The phrase "and equipment used to handle the base material" was added to reduce dragout that results when hexavalent chromium drips off equipment as it is lifted out of the tank. The phrase "unless the liquid is captured by a drip tray or other containment device" was added to allow facilities to capture dragout using a drip tray or other containment device. Instead of returning the equipment to the tank, a drip tray or other containment device may be used to capture the liquid.

The organization of subsection (c)(4)(B) of the 2007 ATCM was changed in subsection (d)(1)(B) of the Proposed Amendments so that there are no longer subsections 1. and 2. because subsection (c)(4)(B)2. of the 2007 ATCM, which requires splash guards when spraying down parts, was moved because to subsection (d)(2)(A)1. of the Proposed Amendments, which sets forth the requirements related to spray rinsing (see below).

The term "nonautomated lines" is known to industry as a plating line in which an operator is physically moving base material from tank to tank. It is important for workers to handle base

material or equipment used to handle base materials in a way that prevents liquid containing chromium or chromic acid from being dripped outside a tank (which is defined as a Tier I, Tier II, or Tier III hexavalent chromium tank, or associated process tank) unless the liquid is captured by a drip tray or other containment device. The method for handling base materials or equipment may vary and can be as simple as wiping down affected base material or equipment or allowing sufficient time for all hexavalent chromium containing liquid to finish dripping back into the tank. This will prevent the spill of the hexavalent chromium containing liquid on the floor near the tanks and minimize the potential for hexavalent chromium to be transported outside of the facility.

Purpose for Adding Subsection (d)(1)(C)

Subsection (d)(1)(C) was added to require that drip trays or containment devices capture and return the liquid to the tanks and be cleaned weekly to prevent accumulation of visible dust or residue. Section 93102.5(c)(4)(A) of the 2007 ATCM includes a requirement applicable to facilities with automated lines that the trays be placed such that the liquid is returned to the tank. This requirement was moved to subsection (d)(1)(C), and the weekly cleaning requirement was added.

Rationale for Adding Subsection (d)(1)(C)

The requirement regarding placement of the trays to return liquid to the tanks that was in subsection (c)(4)(A) of the 2007 ATCM was moved to subsection (d)(1)(C) so that it will apply to drip trays or containment devices used pursuant to subsections (d)(1)(A) and (d)(1)(B). The 2007 ATCM only included this requirement in subsection (A), which is applicable to facilities with automated lines. Since subsection (B) of the Proposed Amendments allows for the use of a drip tray or other containment device for non-automated lines, the requirement to place these devices such that the liquid is returned to the tank should apply to facilities with automated lines and facilities with non-automated lines.

The requirement to clean the drip tray or containment device weekly is necessary to prevent the accumulation of dust or residue, which may be contaminated with hexavalent chromium that could be released as fugitive emissions if not cleaned weekly.

Purpose for Adding Subsection (d)(2)

Subsection (d)(2) sets forth the requirements for spray rinsing of parts and equipment that have been inside a Tier I, II or III tank. Beginning July 1, 2024, the parts being spray rinsed must be fully lowered into a tank so that the liquid does not overspray and is captured inside the tank.

Rationale for Adding Subsection (d)(2)

Subsection (d)(2) sets forth the requirements to prevent hexavalent chromium from being released during spray rinsing. Subsection (d)(2) is applicable starting on July 1, 2024, so that facilities will have six months following the anticipated effective date of the Proposed Amendments to implement these requirements.

Some facilities use water from a rinse tank to spray rinse the base material and equipment after it comes out of the chrome plating tank. This requirement only allows rinsing of these

items when they are fully lowered inside of a tank such that all liquid is captured in the tank. This is to ensure that any hexavalent chromium containing liquid is collected by the tank over which the spray rinsing occurs. Using a spray rinse above the tank can allow droplets of hexavalent chromium liquid to be released as fugitive emissions from the facility.

Purpose for Adding Subsection (d)(2)(A)

Subsection (A) provides alternative methods of spray rinsing. This alternative can only be used if liquid from the spray rinsing is captured and returned to the tank by meeting either subsection (A)1. or 2.

Subsection (A)1. specifies that splash guards can be installed to prevent overspray and return any hexavalent chromium containing liquid back to the tank. The first sentence of subsection (d)(2)(A)1. was moved from subsection (c)(4)(B)2. of the 2007 ATCM. The changes from the language that was in subsection (c)(4)(B)2. to the new subsection (d)(2)(A)1. are depicted in underline/strikethrough for the reader's reference:

~~2.~~1. ~~Each facility~~Facilities spraying down parts over the ~~electroplating or anodizing tank(s)~~Chrome Plating Tank(s) to remove excess ~~c~~Chromic ~~a~~Acid shall have a splash guard installed at the ~~t~~Tank to minimize overspray and to ensure that any ~~h~~Hexavalent ~~c~~Chromium laden liquid is captured and returned to the ~~electroplating or anodizing tank~~Chrome Plating Tank. Splash guard(s) shall be made of non-permeable, durable material (such as metal or plastic) and be free of holes, tears, or gaps. Splash guards shall be cleaned Weekly with water such that there is no accumulation of visible dust; or

The second and third sentences in subsection (A)2. were added to require the splash guards be made of non-permeable, durable material (such as metal or plastic), be free of holes, tears, or gaps, and be cleaned weekly such that there is no accumulation of visible dust.

Subsection (A)2. specifies that if a facility cannot install splash guards because they will interfere with an overhead crane system, they may use a low-pressure spray nozzle to rinse parts in a manner where the water flows off of the part or equipment and directly into the tank.

Rationale for Adding Subsection (d)(2)(A)

The alternatives set forth in subsection (A) are necessary to allow spray rinsing in instances where it is not possible for a facility to spray rinse with the part fully inside a tank. It is necessary to only allow this alternative to be utilized if liquid from the spray rinsing can be captured and returned to the tank by meeting one of the conditions set forth in subsections 1. and 2. to prevent the liquid, which may contain hexavalent chromium, from escaping.

Subsection (A)1. is necessary to provide the alternative of using a splash guard to minimize overspray and return the hexavalent chromium liquid to the tank. These requirements are in place because installing splash guards can effectively reduce releases of liquid during spray rinsing. Liquid that hits the splash guard will drip back down into the tank and be captured.

The first sentence was only minorly amended from the requirement that was included in subsection (c)(4)(B)2. of the 2007 ATCM to improve clarity and incorporate new terminology. The second sentence was added because splash guards must be non-permeable, durable (e.g., metal or plastic), and free from holes, tears, or gaps to prevent releases of hexavalent chromium containing liquid. It is necessary to clean splash guards weekly with water to remove any dust or residue that could potentially contain hexavalent chromium. Cleaning them weekly is required because hexavalent chromium residue may build up on the splash guards, where it can be blown away from the tank and released into the community as fugitive emissions.

Subsection (A)2. is necessary to allow an alternative in cases where installing a splash guard would restrict the facility's overhead crane systems. Some facilities with a crane system for large parts may not be able to operate with a splash guard but still need to conduct spray rinsing. The splash guard can impede the crane system and prevent parts from moving to the next tank. In this case, using a low-pressure spray nozzle would minimize splashing and overspray, and rinsing at a downward angle would allow all liquid to flow straight down into the tank. This is an acceptable alternative because it minimizes spills outside of the tank and allows for a facility to rinse parts as part of their operations.

Purpose for Adding Subsection (d)(3)

Subsection (3) sets forth the requirements to limit air sparging to periods of time when the Tier I, Tier II, or Tier III tank is in use. This requirement goes into effect on July 1, 2024.

Rationale for Adding Subsection (d)(3)

Subsection (d)(3) is necessary to establish the best management practices for air sparging. "Air sparging" is a term commonly known by industry to mean the mixing of the solution inside of a tank via air bubbles introduced from the bottom of the tank. This mixing is important to the operation of a facility because uniformly mixed solutions may be required for proper tank operation. Air sparging can cause hexavalent chromium emissions because the air bubbles that emerge from the tank can contain hexavalent chromium liquid. Thus, air sparging is only permissible during tank operation. This will allow facilities to use air sparging to uniformly mix solution during use of the tank but will prevent excess mixing and emissions during times that the tank is not in use. This is similar to South Coast AQMD Rule 1469(d)(3).

Purpose for Adding Subsection (d)(4)

Subsection (d)(4) sets forth requirements for buffing, grinding, and polishing operations.

Rationale for Adding Subsection (d)(4)

Subsection (d)(4) is necessary to prevent the release of dust generated in the buffing, grinding, or polishing area. Dust can absorb hexavalent chromium liquid and act as a vessel for fugitive emissions to escape into the surrounding communities.

Purpose for Adding Subsection (d)(4)(A)

Subsection (d)(4)(A) of the Proposed Amendments includes the requirements in subsection (c)(6) of the 2007 ATCM (see above). It requires the use of a barrier to separate buffing,

grinding, and polishing areas from the chrome plating operations. The barrier must restrict air flow out of the buffing, grinding or polishing areas, such as plastic strip curtains.

The underline/strikethrough version of the regulatory text displays the language in section 93102.5(c)(6) of the 2007 ATCM in strikeout and the language in section 93102.5(d)(4)(A) in underline since the text has been moved from section 93102.5(c)(6) to section 93102.5(d)(4)(A). In addition to being moved, the language has undergone other amendments. The language that was moved from subsection (c)(6) to subsection (d)(4)(A) is depicted in underline/strikethrough below to demonstrate the changes to language from the 2007 ATCM for text that was moved to subsection (d)(4)(A) in the Proposed Amendments. The underline/strikethrough language provided below is intended to assist the reader in analyzing changes from the 2007 ATCM to the Proposed Amendments that have been made to provisions that were moved. This should serve as a supplementary reference since the underline strikethrough version of the regulatory text does not display these changes.

~~(6)~~(A) Buffing, grinding, or polishing areas within a ~~f~~Facility shall be separated from the ~~electroplating or anodizing operation~~ Chrome Plating Operations by installing a ~~physical b~~Barrier~~. The barrier may take the form of~~, such as plastic strip curtains~~.~~, that restricts air flow out of the buffing, grinding, or polishing areas.

"Electroplating or anodizing operation" was changed to "chrome plating operations." The word "physical" was removed. The phrase "the barrier may take the form of" was replaced with "such as" and two commas were added. The phrase "that restricts air flow out of the buffing, grinding, or polishing areas" was added.

Rationale for Adding Subsection (d)(4)(A)

Subsection (A) is intended to prevent dust generated in the buffing, grinding, or polishing area from spreading throughout the facility, which may contribute to fugitive emissions. This requirement has not been changed substantively and is only changed to incorporate new terminology and add the clarifying phrase "that restricts air flow out of the buffing, grinding, or polishing areas." It is necessary to specify that the barrier must restrict air flow out of the buffing, grinding, or polishing areas to reduce the fugitive emissions that could be caused by this air flow. The sentence was simplified by removing the phrase "barrier may take the form of" and replacing it with commas and "such as."

Purpose for Adding Subsection (d)(4)(B)

Subsection (B) requires that all buffing, grinding, or polishing be conducted within a building enclosure beginning January 1, 2026.

Rationale for Adding Subsection (d)(4)(B)

Conducting buffing, grinding, or polishing within a building enclosure will reduce the dust that gets blown out of the buffing, grinding, and polishing area. This dust can absorb hexavalent chromium liquid and be released into the surrounding community. Subsection (B) becomes effective on January 1, 2026, to provide two years following the anticipated

effective date of the Proposed Amendments for facilities to install or construct a building enclosure around their buffing, grinding, and polishing area.

Purpose for Adding Subsection (d)(5)

Subsection (d)(5) prohibits compressed air cleaning and drying operations from being conducted within 15 feet of any Tier II or Tier III tank unless a barrier separates the compressed air application area from the Tier II or Tier III tanks. It also allows for a tank wall to be considered a barrier if the part subject to the compressed air is fully below the top of the tank wall.

Rationale for Adding Subsection (d)(5)

Subsection (d)(5) is necessary to prevent compressed air cleaning and drying operations from being conducted too close to a Tier II or Tier III tank unless a barrier is installed to separate the operation from the tanks. Some facilities use compressed air to clean and dry parts and equipment. Subsection (d)(5) will prevent the compressed air from blowing any of the liquid or fumes in the Tier II or Tier III tank out of the tank and onto the ground, where they can be released from the facility. Compressed air cleaning and drying may be performed inside a tank if the part remains fully below the tank lip to contain the compressed air and prevent it from blowing any hexavalent chromium containing liquid or fumes onto the ground. Compressed air cleaning and drying that occurs more than 15 feet from the Tier II or Tier III tanks is not expected to impact the collection system on the tank or provide strong enough airflow over the tank to blow any hexavalent chromium containing liquid or fumes out of the tank.

Purpose for Adding Subsection (d)(6)

Subsection (d)(6) requires tanks that contain hexavalent chromium to be clearly labeled starting July 1, 2024. The labels must include the tank number or other identifier, District permit number, bath components, maximum concentration of hexavalent chromium, operating temperature range, any agitation methods used, and designation of whether it is a Tier I, Tier II, or Tier III tank.

Rationale for Adding Subsection (d)(6)

Subsection (d)(6) is necessary to ensure that inspectors can identify the tank, check the corresponding permit, identify the bath components, determine the maximum concentration of hexavalent chromium, check the temperature range, identify any agitation methods used, and determine the tier of the tank. This information is necessary for the inspector to determine whether the tank is in compliance with the Proposed Amendments and to undertake enforcement action as necessary. The bath components, maximum hexavalent chromium concentration, and agitation method are properties that would be used to verify the tier level of a tank. This requirement begins on July 1, 2024, to provide facilities six months following the anticipated effective date of the Proposed Amendments to label their hexavalent chromium plating tanks.

7. § 93102.6 Requirements that Apply to Trivalent Chromium Plating or Enclosed Hexavalent Chromium Plating Tanks.

Purpose for Changes to Title of Section 93102.6

The section title was updated to replace "Special Provisions that Apply Only to Facilities that Perform Electroplating Using a Trivalent Chromium Bath or Enclosed Hexavalent Chromium Electroplating Tanks" with "Requirements that Apply to Trivalent Chromium Plating or Enclosed Hexavalent Chromium Tanks."

Rationale for Changes to Title of Section 93102.6

The section title was updated to reflect new terminology used in the Proposed Amendments. "Special Provisions" was replaced with "Requirements" for consistency with the language used in other parts of the Proposed Amendments. Also, the phrase "only to facilities that perform electroplating using a trivalent chromium bath" was replaced with "that apply to trivalent chromium plating" so that the title could be more succinct. These changes do not change the applicability of this section. Changes to subsequent subsections are discussed below.

Section 93102.6(a)

Purpose for Changes to Section 93102.6(a)

The subsection is a header that was only amended to remove "electroplating using a" and to replace "plating" with "bath."

Rationale for Changes to Section 93102.6(a)

These changes were necessary for consistency with the language used in section 93102.6. Further, it improves succinctness to say, "facilities that perform trivalent chromium plating" rather than "facilities that perform electroplating using a trivalent chromium bath."

Purpose for Changes to Section 93102.6(a)(1)

Subsection (a)(1) was amended to remove the table that was in the 2007 ATCM and incorporate its requirements in new subsection (A) and (B). As with the 2007 ATCM, facilities may comply with section 93102.6(a)(1) by meeting either of these requirements.

The second row of the table in the 2007 ATCM requires use of an add-on air pollution control device or chemical or mechanical fume suppressant to meet an emission limit of less than or equal to .01 milligrams (mg) of hexavalent chromium per dry standard cubic meter (dscm). This requirement has been incorporated into subsection (a)(1)(A), but the Proposed Amendments no longer specify that the emission limit must be met by an add-on air pollution control device or through use of a fume suppressant. Rather, the Proposed Amendments allow facilities to comply with the emission limit using any method that meets the limit. The language "and complying with the reporting requirements in section 93102.13(d)(1)(B); or" was added to subsection (A) of the Proposed Amendments.

The third row of the table in the 2007 ATCM requires use of a chemical fume suppressant containing a wetting agent and compliance with recordkeeping and reporting provisions of section 93102.12(i) and 93102.13(e). The same substantive requirement was incorporated into subsection (B) with minor changes. The term "bath ingredient" was replaced with the defined term "bath component." Also, the recordkeeping and reporting requirements referred to in the third row of the table in the 2007 ATCM were updated to reflect the new numbering: section 93102.12(i) in the 2007 ATCM is now section 93102.12(h) in the Proposed Amendments, and section 93102.13(e) in the 2007 ATCM is now section 93102.13(d)(1)(A) in the Proposed Amendments (see below).

Rationale for Changes to Section 93102.6(a)(1)

Table 93102.6 was removed, and the substantive requirements were simplified and incorporated into subsections (A) and (B) to improve clarity and readability.

Subsection (A) of the Proposed Amendments requires chromium emissions to meet the ≤ 0.01 mg/dscm limit but does not require that the limit be met using add-on air pollution control equipment or fume suppressants. As such, owners or operators may elect to use any control that is able to meet this limit for trivalent chromium plating. This improves operational flexibility in complying with the emission limit. The reference to the source test requirement in section 93102.7(a)(5) and the reporting requirements in section 93102.13(d)(1)(B) were added to provide clarity to the regulated community regarding the source test and reporting requirements that apply to facilities complying with the trivalent chromium plating provision by meeting the emission limit in subsection (A). This reference was added to assist the reader in locating the applicable requirements and for consistency with subsection (B), which provides similar references.

As an alternative to meeting the emission limit in subsection (A), emissions from trivalent chromium plating tanks can be controlled pursuant to subsection (B) by using a chemical fume suppressant containing a wetting agent as a bath component. This substantive requirement is unchanged from the requirement in the third row of the table in the 2007 ATCM. Subsection (B) updated the terminology to incorporate the defined term "bath component" instead of the undefined term "bath ingredient" to increase clarity and consistency of terminology.

Subsection (B) updated the references to the recordkeeping and reporting provisions of sections 93102.12(i) and 93102.13(e) that were included in the third row of the table in the 2007 ATCM. Facilities using a wetting agent as a bath component for trivalent chromium plating must still comply with these recordkeeping and requirement provisions, which have been updated to reflect changes to the numbering in sections 93102.12 and 93102.13 in the Proposed Amendments. Section 93102.12(i) of the 2007 ATCM was renumbered to section 93102.12(h) and requires records of trivalent chromium plating components to be maintained for facilities complying with section 93102.6(a)(1)(B). Similarly, the reporting requirement in section 93102.13(e) of the 2007 ATCM is now numbered as section 93102.13(d)(1)(A), which requires reports for trivalent chromium plating operations complying with section 93102.6(a)(1). Note: sections 93102.12(h) and 93102.13(d) have been amended to clarify the applicability of the requirements by referencing the specific subsections in 93102.6(a)(1) that they apply to (see Purpose and Rationale for sections 93102.12(h) and

93102.13(d)).

Purpose for Removal of Prior Subsection (a)(2)

Subsection (a)(2) of the 2007 ATCM was removed. It required new facilities that perform trivalent chromium plating to conduct and submit a facility wide site-specific risk analysis to the District in accordance with the District's procedures.

The remaining subsections were renumbered to account for the removal of subsection (a)(2).

Rationale for Removal of Prior Subsection (a)(2)

This requirement was removed because it could prevent, or delay, or add to the expense of conversion from hexavalent chromium plating to trivalent chromium plating. Requiring a site-specific risk analysis for trivalent chromium plating could cause significant cost and delay the transition time for facilities converting from hexavalent chromium to trivalent chromium. CARB has assessed potential risks for the use of trivalent chromium plating and determined that a facility wide site-specific risk analysis would not be needed to convert to trivalent chromium (see Section V).

Purpose for Changes to Subsection (a)(2)

Subsection (a)(2) was renumbered from subsection (a)(3) of the 2007 ATCM and amended to update the terminology and improve succinctness by using the defined term "trivalent chromium plating" instead of the phrase "electroplating using a trivalent chromium bath." The word "complying" was changed to "complies with subsection (a)(1)(B)" and the phrase "a chemical fume suppressant containing" was deleted. The references to sections 93102.4 and 93102.5 were removed. The reference to section 93102.12(f) was changed to subsection (g) and the reference to subsection (h) was changed to subsection (i).

Rationale for Changes to Subsection (a)(2)

The change to use the defined term "trivalent chromium plating" instead of "electroplating using a trivalent chromium bath" incorporates new terminology and improves succinctness and readability. The change from "complying" to "complies" is necessary because "complying" is grammatically incorrect. The reference to subsection (a)(1)(B) was added to improve clarity regarding the requirement referenced. Sections 93102.4 and 93102.5 were removed because they are not applicable to trivalent chromium plating in the Proposed Amendments and do not need to be included here.

The reference to section 93102.12(f) and section 93102.12(h) in the 2007 ATCM were changed to subsections (g) and (i) due to changes in numbering in section 93102.12. Subsection (a)(2) lists the requirements that do not apply to owners and operators who comply with section 93102.4(a)(1)(B) by using a wetting agent. This exempts owners or operators that fall under this provision from having to comply with the recordkeeping requirements set forth in section 93102.12(a)–(g) and (i). However, owners and operators that are complying with section 93102.4(a)(1)(B) would still need to maintain the records required in section 93102.12(h) and (j). This is necessary because section 93102.12(h) applies to facilities complying with section 93102.4(a)(1)(B) and requires recordkeeping regarding the wetting agent used in trivalent chromium plating. It is necessary for owners and operators to

continue to comply with section 93102.12(j), which requires records to be maintained for five years (see below). As such, the records regarding the wetting agent and bath components that owners and operators who fall under this provision would have to maintain pursuant to section 93102.12(h) would need to be kept for five years pursuant to section 93102.14(j).

Purpose for Changes to Subsection (a)(3)

Subsection (a)(3) was amended to replace the phrase "electroplating using a trivalent chromium bath" to "trivalent chromium plating." The word "complying" was changed to "complies" and the phrase "in subsection (a)(1)(A)" was added. The references to sections 93102.4 and 93102.5 were removed.

Rationale for Changes to Subsection (a)(3)

The change to use the defined term "trivalent chromium plating" is necessary to incorporate new terminology and improve succinctness, readability, and clarity. The change from "complying" to "complies" is necessary because "complying" is grammatically incorrect. The reference to subsection (a)(1)(A) was added to improve clarity regarding the requirement referenced. Sections 93102.4 and 93102.5 were removed because they are not applicable to trivalent chromium plating in the Proposed Amendments and do not need to be included here.

Purpose for Changes to Subsection (a)(4)

Subsection (a)(4) was amended to add the phrase "tanks being used for trivalent chromium plating" instead of "trivalent chromium tanks" and to add the defined term "hexavalent chromium containing tanks" instead of "hexavalent chromium tanks." The word "comply" was changed to "be in compliance." The phrase "requirements of the ATCM" was replaced with "applicable requirements of this ATCM." The following phrase was deleted: "relating to hexavalent chromium facilities that do not have enclosed tanks."

Rationale for Changes to Subsection (a)(4)

The phrase "tanks being used for trivalent chromium plating" and "hexavalent chromium containing tank" were included because they incorporate defined terms and using the defined terms improves clarity and ensures consistency of terminology throughout the Proposed Amendments. "Comply" was changed to "be in compliance" for grammatical reasons because tanks do not comply themselves but rather are in compliance with requirements. The change to the phrase "applicable requirements of this regulation" improves clarity by specifying that it is referring to *this* ATCM rather than *the* ATCM and because only the requirements applicable to the tank at issue would need to be implemented for facilities that have hexavalent chromium tanks in addition to trivalent chromium tanks. The phrase "relating to hexavalent chromium facilities that do not have enclosed tanks" was removed because it was unnecessary, and its deletion improves clarity.

Purpose for Adding Subsection (a)(5)

Subsection (a)(5) requires tanks that contain trivalent chromium to be clearly labeled starting July 1, 2024. The labels must include the tank number or other identifier, District permit number, and the bath components.

Rationale for Adding Subsection (a)(5)

Subsection (a)(5) is necessary to ensure that inspectors can identify the tank, check the corresponding permit, and identify the bath components. This information is necessary for the inspector to determine whether the tank is in compliance with the Proposed Amendments and to undertake enforcement action as necessary. The requirement begins on July 1, 2024, to provide facilities six months following the anticipated effective date of the Proposed Amendments to label their trivalent chromium plating tanks.

Section 93102.6(b)

Purpose for Changes to Section 93102.6(b)

Section 93102.6(b) was amended to incorporate new terminology and other minor changes that are not substantive. Section 93102.6(b) was also amended to remove the requirement in subsection (b)(4).

Rationale for Changes to Section 93102.6(b)

The amendments were necessary primarily to update the subsection with terms used in the Proposed Amendments and to remove a requirement that is no longer applicable.

Purpose for Changes to Subsection (b)(1)

Subsection (b)(1) was amended to remove the phrases "hexavalent chromium electroplating" to change "electroplating tank(s)" to the defined term "enclosed hexavalent chromium plating tank(s)." Subsection (A) was amended to add "enclosed hexavalent chromium plating tank" and "passage through" and to delete "or." Subsection (B) was only changed to capitalize defined terms and incorporate the full defined term "chrome plating bath." Subsection (C) was amended to add the word "emission" and to replace "determined by using the calculation procedure specified in Appendix 7" with "determined as specified in Appendix 6."

Rationale for Changes to Subsection (b)(1)

The phrases "hexavalent chromium electroplating" was removed to improve succinctness and readability. If a facility has an enclosed hexavalent chromium tank, it is a "hexavalent chrome plating facility," so that phrase is not necessary. The defined term "enclosed hexavalent chromium plating tanks" replaced the term "electroplating tank(s)" to clarify that these requirements apply to emissions from enclosed hexavalent chromium plating tanks.

The addition of "enclosed hexavalent chromium plating tank" to subsection (A) improves clarity by specifying that the emission limit applies to each enclosed hexavalent chromium plating tank. The addition of "passage though" improves clarity and readability because the emission limit must be measured after the hexavalent chromium has passed through the device. The word "or" was removed for consistency with the list format throughout the Proposed Regulation, which only includes "and" and "or" after the second to last item of the list. Thus, "or" would apply to all of the parts of the list even though it is only located after the second to last item.

Subsection (C) added the word "emission" because it was inadvertently excluded from the 2007 ATCM, which intends to compare the mass *emission* rate of the total chromium to the maximum allowable mass emission rate. The phrase "determined by using the calculation procedure specified in Appendix 7" was replaced with "determined as specified in Appendix 6" for succinctness and to update the reference to the new number for the applicable appendix.

Purpose for Changes to Subsection (b)(2)

Subsection (b)(2) was amended to remove the word "existing" and to add the phrase "only has tanks that are" and the word "applicable."

Rationale for Changes to Subsection (b)(2)

The word "existing" was removed because this requirement applies to all facilities that only have tanks that are enclosed hexavalent chromium plating tanks, which could include new facilities and not just existing facilities. The addition of the word "applicable" is necessary because facilities only need to comply with requirements that are applicable.

Purpose for Changes to Subsection (b)(3)

Subsection (b)(3) was amended to use the defined terms "enclosed hexavalent chromium plating tanks" and "hexavalent chromium containing tanks." The word "applicable" was added, "the" was changed to "this," and the following phrase was removed: "relating to hexavalent chromium facilities that do not have enclosed tanks.

Rationale for Changes to Subsection (b)(3)

Defined terms were incorporated for consistency and clarity. The word "applicable" was used instead of the phrase "relating to hexavalent chromium facilities that do not have enclosed tanks" to improve succinctness and clarity because all applicable requirements would apply if a facility were operating unenclosed hexavalent chromium plating tanks in addition to enclosed hexavalent chromium plating tanks. "The" was changed to "this" for clarity and consistency in referencing *this* ATCM, which is the Proposed Amendments.

Purpose for Removal of Subsection (b)(4)

Subsection (b)(4) was removed from the Proposed Amendments.

Rationale for Removal of Subsection (b)(4)

Subsection (b)(4) was removed because new chrome plating facilities are no longer allowed to use hexavalent chromium starting on January 1, 2024.

8. § 93102.7 Source Test Requirements and Test Methods

Purpose for Overarching Changes to Section 93102.7

The title of section 93102.7 was changed to replace the word "performance" with "source."

The 2007 ATCM required a one-time performance test to demonstrate that the facility was complying with the applicable emission limit in section 93102.4. The Proposed Amendments require source testing on all Tier III tanks every two years starting January 1, 2026 (see below).

Rationale for Overarching Changes to Section 93102.7

This change was necessary for consistency in the use of the defined term "source test." The 2007 ATCM used the term "performance test." Using the defined term "source test" improves clarity and aligns with commonly used terminology. See below for additional information on the specific amendments.

Section 93102.7(a)

Purpose for Changes to Section 93102.7(a)

Section 93102.7(a) was amended to replace the word "performance" with "source."

Rationale for Changes to subsection 93102.7(a)

Changing "performance" to "source" was necessary to include the defined term "source test" for consistency and clarity.

Purpose for Changes to Subsection (a)(1)

Subsection (a)(1) was amended to remove the original source test requirements and replace them with updated requirements for source testing. Subsection (1) requires all functional chrome plating facilities that use hexavalent chromium to conduct a source test on all Tier III tanks in the facility by January 1, 2026, to demonstrate compliance with the applicable emission limits of in section 93102.4.

CARB removed subsections (a)(1)(A)–(D) of the 2007 ATCM. Instead of separating out the requirements applicable to existing facilities, modified facilities, and new facilities in this list, the Proposed Amendments apply the same standard to all functional chrome plating facilities that use hexavalent chromium.

Rationale for Changes to Subsection (a)(1)

The amendments were necessary because CARB is changing the source testing requirements for the Proposed Amendments. This removed all old conditions pertaining to the types of facilities that needed to perform a test.

The terms "performance test" or "emissions test" are replaced with the defined term "source test" in the Proposed Amendments for consistency and clarity. Source testing is limited to all Tier III tanks because Tier III tanks have the highest potential to emit hexavalent chromium due to the temperature and concentration. The initial source test must be completed by January 1, 2026, which provides two years following the anticipated effective date of the Proposed Amendments for facilities to implement the new emission limit and conduct the source test. This requirement only applies to functional chrome plating facilities because decorative chrome plating facilities are required to phase out hexavalent chromium

on January 1, 2027, and CARB is not adding any additional requirements for those tanks prior to their phase out.

The list in subsections (A)–(D) was removed to improve succinctness by stating that the source test must demonstrate compliance with the applicable emission limitation in section 93102.4. This was also necessary because the list is no longer reflective of the updated the requirements because the October 24, 2007, date in previous subsection (B) has passed and new hexavalent chromium plating facilities referenced in previous subsection (C) are prohibited after January 1, 2024. Further, previous subsection (D) was removed for organization and readability because the requirements applicable to facilities that are operating pursuant to an alternative compliance plan are included in the Alternative Compliance Plan section (section 93102.14) and the corresponding Appendix 8.

Note: the requirements that the source test must demonstrate are met are set forth in subsections 93102.4(c), (e) and (f) and are applicable depending on whether the Tier III tank is a chrome plating tank or not and whether the facility has been modified or not.

Purpose for Changes to Subsection (a)(2)

Subsection (a)(2) requires modified functional chrome plating facilities that undergo modifications to Tier III tanks that are not complete by January 1, 2026, to conduct a source test on the modified Tier III tanks no later than 60 days after initial start-up to demonstrate compliance with the emission limit in section (e)(2)(B).

Subsection (a)(2) was changed to replace "new or modified facilities" with "modified functional chrome plating facilities that undergo modifications to Tier III tanks that are not complete by January 1, 2026." The phrase "the performance test required by this section 93102.7" was replaced with "an initial source test on these tank(s)." The following language was added to the end: "to demonstrate compliance with the applicable hexavalent chromium emission limitations in section 93102.4(e)(2)(B)."

Rationale for Changes to Subsection (a)(2)

These amendments are necessary to specify the timing for conducting an initial source test for Tier III tanks that are modified after January 1, 2026, which must be done within 60 days after initial start-up. It was necessary to remove the word "new" because new hexavalent chromium plating facilities are prohibited after January 1, 2024. The phrase "modified functional chrome plating facilities that undergo modifications to Tier III tanks that are not complete by January 1, 2026" is necessary because Tier III tanks that are modified prior to January 1, 2026, must conduct an initial source test by January 1, 2026, pursuant to subsection (a)(1), but subsection (a)(2) is needed to clarify when an initial source test must be conducted for Tier III tanks modified after this date. Note that Tier III tanks, by definition, contain hexavalent chromium.

"The performance test required by this section 93102.7" was replaced with "an initial source test on these tank(s)" for consistency with the terminology used throughout the Proposed Amendments and to improve succinctness. The phrase "to demonstrate compliance with the applicable hexavalent chromium emission limitations in section 93102.4(e)(2)(B)" was added for completeness and consistency with subsection (a)(1) and to clarify that that the purpose of

the source test is to demonstrate compliance with the emission limitation applicable to modified tanks pursuant to section 93102.4(e)(2)(B).

Purpose for Removal of Prior Subsection (a)(3)

Subsection (a)(3) of the 2007 ATCM was removed from the Proposed Amendments. It required existing facilities to conduct the performance test by the applicable effective date in Table 93102.4.

Rationale for Removal of Prior Subsection (a)(3)

This version of subsection (a)(3) in the 2007 ATCM was removed because the effective dates in Table 93102.4 have passed and have been deleted from the version of Table 93102.4 in the Proposed Amendments (see above).

Purpose for Adding New Subsection (a)(3)

The new subsection (a)(3) was added to the Proposed Amendments to require that all functional chrome plating facilities that use hexavalent chromium conduct ongoing source tests every two calendar years on all Tier III tanks (which, by definition, contain hexavalent chromium). The initial source test must be conducted on January 1, 2026, pursuant to subsection (a)(1) or within the timeframe required for modified tanks pursuant to subsection (a)(2). After the initial source test is complete, the ongoing source tests would be required every two years.

Rationale for Adding New Subsection (a)(3)

This addition was necessary because the 2007 ATCM did not include a requirement for ongoing source testing of Tier III tanks. Ongoing source testing is necessary to verify continued compliance with the applicable emission limits. This will confirm whether the control equipment is in good operating order and is maintained such that the emission limits are still achieved. Two years was selected to balance the need for regular updates on emissions from the Tier III tanks, based in part on concerns expressed by communities, and the cost of each source test.

Purpose for Changes to Subsection (a)(4)

Subsection (a)(4) changes "performance test" to the defined term "source test" and updates the reference to section 93102.7(c) instead of (b). This amendment does not change the substantive requirement or the specified method of calculating a facility's annual emissions.

Purpose for Changes to Subsection (a)(4)

The change to "source test" is necessary to incorporate the defined term for consistency and clarity (see above). The update of the subsection was necessary to accommodate the deletion of previous subsection (b) since the prior version of subsection (c) that is referenced is now renumbered to subsection (b) in the Proposed Amendments.

Purpose for Removal of Prior Subsection (a)(5)

Subsection (a)(5) of the 2007 ATCM provided that facilities that fall within the designated annual permitted amp-hr usage (depending on proximity to a sensitive receptor) do not need to conduct a performance test.

Rationale for Removal of Prior Subsection (a)(5)

The version of subsection (a)(5) in the 2007 ATCM has been removed because all functional chrome plating facilities operating Tier III hexavalent chromium tanks must complete the source testing. It is necessary for all Tier III tanks to have source tests to confirm that the tanks are meeting the applicable emission limits, including the new more stringent emission limits established by the Proposed Amendments.

Purpose for Changes to Subsection (a)(5)

Subsection (a)(6) of the 2007 ATCM has been renumbered to subsection (a)(5) due to the removal of prior subsection (a)(5). The term "emission rate" was changed to the defined term "emission limitation," and the phrase "upon initial start-up" has been added to the end.

Rationale for Changes to Subsection (a)(5)

Subsection (a)(5) has been amended to only require source tests for trivalent chromium plating tanks upon initial start-up. This facility must conduct a source test to demonstrate that the emission limitation in section 93102.6(a)(1)(A) is met the first time the facility begins operating a trivalent chromium plating tank. "Emission rate" was replaced with "emission limitation" to incorporate the defined term for consistency and clarity.

Section 93102.7(b)

Purpose for Removal of Prior Section 93102.7(b)

Subsection (b) was removed because it is no longer applicable to the Proposed Amendments. The numbering of subsections (b)–(d) of the Proposed Amendments have been changed to accommodate the removal of subsection (b).

Rationale for Removal of Prior Section 93102.7(b)

The applicability dates in former subsection (b) have passed. CARB does not intend for previous sources test to be used to fulfill the requirements of subsection (a) and therefore removed this subsection in its entirety.

Purpose for Changes to Section 93102.7(b)

Section 93102.7(c) in the 2007 ATCM was renumbered to section 93102.7(b) in the Proposed Amendments.

Rationale for Changes to Section 93102.7(b)

It was necessary to renumber subsection (c) to (b) due to the removal of prior section 93102.7(b).

Purpose for Changes to Subsection (b)(1)

Subsection (b)(1) was amended from subsection (c)(1) of the 2007 ATCM to incorporate new terminology. Subsection (1)(A) was amended to use the shorthand "CARB" and remove the extra "or" after subsection (A).

Rationale for Changes to Subsection (b)(1)

The amendments to this subsection were necessary to update to the terminology and formatting used throughout the Proposed Amendments. The extra "or" was removed for consistent formatting with the other lists in the Proposed Amendments, but the "or" still applies to each of the subsections in the list.

Purpose for Changes to Subsection (b)(2)

Subsection (b)(2) was only amended to incorporate new terminology and update the reference to the Appendix 4 instead of Appendix 5. Undefined words that were capitalized were changed to lower case.

Purpose for Changes to Subsection (b)(2)

These changes were necessary to incorporate new terminology and update the reference to the Appendix due to the change in number of Appendix 5 to Appendix 4. Uncapitalizing words that are not defined terms improves clarity and consistency by distinguishing defined terms using capital letters.

Purpose for Changes to Subsection (b)(3)

The phrase "surface tension using a tensiometer shall be measured" was replaced with "when using a tensiometer, surface tension shall be measured." Similarly, the phrase "surface tension using a stalagmometer shall be measured" was replaced with "when using a stalagmometer, surface tension shall be measured." The reference to Appendix 8 was changed to Appendix 7.

Rationale for Changes to Subsection (b)(3)

These changes were made for clarity, readability, and precision but did not change the substantive requirements. "Surface tension using a tensiometer shall be measured" was changed for precision of language because it is not the surface tension that uses a tensiometer; rather this requirement applies to measurements of the surface tension when using a tensiometer. Similarly, it is not surface tension that uses a stalagmometer; rather, this requirement applies to measurements of the surface tension when using a stalagmometer. The updated reference to the Appendix was necessary because the Appendix 8 in the 2007 ATCM has been renumbered to Appendix 7 in the Proposed Amendments.

Section 93102.7(c)

Purpose for Changes to Section 93102.7(c)

Subsection (d) in the 2007 ATCM has been renumbered to subsection (c) because previous subsection (b) has been removed. Non-substantive changes were made to incorporate new

terminology. The phrase "of the end user" was replaced with "for the facility" and the phrase "including test methods" was added.

Rationale for Changes to Section 93102.7(c)

The phrase "for the facility" replaced "of the end user" to clarify that this is referring to the facility. The addition of "including test methods" was necessary to specify that the test method must be clearly stated in the submitted pre-test protocol so that the District can verify that the proper method is being used to conduct the source test.

Prior Section 93102.7(e)

Purpose for Removal of Prior Section 93102.7(e)

Section 93102.7(e) has been removed from the Proposed Amendments. Subsection (e) required the testing of all emission points in a facility subject to the requirements of the regulation unless a waiver is granted by U.S. EPA and approved by the District.

Rationale for Removal of Prior Subsection 93102.7(e)

The Proposed Amendments to subsection (a)(1) requires that the facility test all Tier III tanks, which are the same as the emission points listed in this subsection (e). Therefore, subsection (e) is no longer necessary and was removed from the Proposed Amendments.

9. § 93102.8 Chemical Fume Suppressants

No substantive changes to the title or introduction language were made. Changes to each individual subsection are discussed below.

Section 93102.8(a)

Purpose for Changes to Section 93102.8(a)

Subsection was amended to add the phrase "as required by Appendix 7" and the following sentence: "The approved use of each fume suppressant is indicated in parenthesis."

Table 93102.8 was amended to remove old types of chemical fume suppressants and add new types and to change the names of the chemical fume suppressants and manufacturers. The values for the surface tension measured by a stalagmometer and tensiometer have been updated accordingly.

Rationale for Changes to Subsection 93102.8(a)

The amendments were necessary to provide clarity to subsection (a). The phrase "as required by Appendix 7" was added to point the reader to the appendix that includes the procedures for using a stalagmometer. The sentence "The approved use of each fume suppressant is indicated in parenthesis" was added because Table 93102.8 now specifies the type of chrome plating operations (decorative chrome plating, hard chrome plating, or chromic acid anodizing) for which each fume suppressant is approved for use in parentheses.

It was also necessary to update the list of approved fume suppressants to reflect those that have been approved for use since the last amendments and remove those that are no longer

approved for use. The five fume suppressants in the version of Table 93102.8 from the 2007 ATCM have been removed because they contain PFOS. The use of PFOS in fume suppressants was prohibited by U.S. EPA and these products are no longer being offered for sale in California. The five fume suppressants that have replaced them in the updated version of Table 93102.8 are approved for use at California facilities. They may contain PFAS compounds but do not contain any PFOS. While the use of PFAS in future fume suppressants is prohibited, these fume suppressants are already approved. Since they are approved and serve an important role in controlling hexavalent chromium emissions from chrome plating facilities, CARB is not prohibiting their use at this time. These fume suppressants have been tested by third-party source testing companies and shown to meet the required limit of 0.01 mg/amp-hr. There are currently no other fume suppressants allowed to be used in California. The parentheticals after the chemical fume suppressant are necessary to specify which types of operations (decorative chrome plating, hard chrome plating, or chromic acid anodizing) are approved for use of that fume suppressant. For example, Fumetrol 21 LF2® and HCA 8.4® are only approved for use in hard chrome plating.

Section 93102.8(b)

Purpose for Changes to Section 93102.8(b)

This subsection was amended to add subsection (b)(1) regarding alternative chemical fume suppressants, which provides, "The chemical fume suppressant does not contain PFAS or any PFAS compound." The numbering of previous subsections (1) and (2) were changed to (2) and (3) to accommodate the addition of new subsection (1). Subsections (2) and (3) have only been amended to incorporate new terminology, to capitalize defined terms, and to add a comma was added after "as measured by a stalagmometer" in subsection (3).

Rationale for Changes to Section 93102.8(b)

The amendment was necessary to add the new subsection (b)(1), which prohibits chemical fume suppressants that contain PFAS or any PFAS compound from being used as an alternative chemical fume suppressant. The use of PFAS is prohibited from alternative chemical fume suppressants because PFAS is a toxic class of chemicals that have health and environmental impacts. No substantive changes have been made to section 93102.8(b)(3). The comma that was added after "as measured by a stalagmometer" improved grammar but did not change the substantive requirement.

No substantive changes have been made to section 93102.8(b)(3). The comma that was added after "as measured by a stalagmometer" improved grammar but did not change the substantive requirement.

Section 93102.8(c)

No substantive changes have been made to section 93102.8(c).

10. § 93102.9 Parameter Monitoring Requirements

All changes to this section were for capitalization of defined terms and incorporation of terminology for the Proposed Amendments and addition of a comma to improve grammar

and consistency. No substantive changes were made and therefore no further Purpose and Rationale is presented.

11. § 93102.10 Inspection and Maintenance Requirements

Purpose for Changes to Subsection 93102.10(a)

The phrase "chrome plating facilities using" was added to the beginning of subsection (a) instead of "electroplating and chromic acid anodizing facilities."

Rationale for Changes to Subsection 93102.10(a)

This change incorporates new defined terminology for consistency. Further, it improves clarity to specify that Table 93102.10 applies to chrome plating facilities using hexavalent chromium.

Purpose for Changes to Table 93102.10

Subsection 93102.10(a) was amended to capitalize defined terms and incorporate new terminology and to correct grammar (e.g., adding or deleting commas). The defined term "enclosed hexavalent chromium plating tanks" replaced "chromium tanks."

A new row was added to the end of the table that sets the requirement to perform weekly visual inspections of the building enclosures for any breaches in the building enclosure(s) required pursuant to section 93102.4(d).

Rationale for Changes to Table 93102.10

The Proposed Amendments use the defined term "enclosed hexavalent chromium plating tanks" instead of "chromium tanks" to improve clarity and consistency. This did not change the substantive requirement because the bracketed text in the 2007 ATCM and the Proposed Amendments indicates that it applies to facilities subject to section 93102.6(b), which is the section that sets forth requirements for enclosed hexavalent chromium plating tanks.

The new row was necessary to add the requirement for weekly visual inspections of enclosures to determine whether there are any breaches. This ensures prompt identification of any breach so that it can be repaired because a breach can allow significant fugitive emissions of hexavalent chromium to escape from the building enclosure. It is necessary to include the language "any breaches in the building enclosure required pursuant to section 93102.4(d)" because the weekly inspections of building enclosure are only necessary if a building enclosure is required pursuant to section 93102.4(d). Since only functional plating facilities that use hexavalent chromium have to implement building enclosures, this requirement would not apply to decorative chrome plating facilities. Further, building enclosures are not required until January 1, 2026, so functional chrome plating facilities would not have to perform weekly inspections of building enclosures until January 1, 2026.

Purpose for Changes to Subsection 93102.10(b)

This subsection was amended to replace the word "is" with "are" and "develop" with "also include specific" and to add the phrase "determined by the manufacturer."

Rationale for Changes to Subsection 93102.10(b)

The amendment was necessary to clarify that add-on air pollution control device(s) that are custom built must include requirements for their operation and maintenance. The use of the phrase "also include specific" clarifies that these requirements must be specified. The term "determined by the manufacturer" is necessary because the manufacturer of the add-on air pollution control device must provide the specific operation and maintenance requirements associated with the custom-built device.

12. § 93102.11 Operation and Maintenance Plan (O & M Plan) Requirements.

All changes to this section were for capitalization of defined terms and incorporation of terminology for the Proposed Amendments. No substantive changes were made and therefore no further Purpose and Rationale is presented.

13. § 93102.12 Recordkeeping Requirements

All changes to sections 93102.12(a) and (b) were for capitalization of defined terms and the first terms in lists and standardization of terminology for the Proposed Amendments.

Purpose for Changes to Section 93102.12(c)

Section 93102.12(c) and subsections (1)–(6) were changed to incorporate the new terminology and to capitalize defined terms.

Subsection (c)(1) was changed to delete the word "actual" and replace the word "during" with the phrase "at the end of."

Subsection (c)(2) was changed to replace "once a week" with "weekly."

Subsections (c)(4)(A) and (B) were changed to add "for" and "that are." The word "as" was added to subsection (c)(4)(B).

Rationale for Changes to Section 93102.12(c)

These amendments was necessary to clarify the requirements and ensure consistent use of terminology and capitalization of defined terms.

The word "actual" in subsection (c)(1) was removed because it was not necessary. The cumulative rectifier usage will by default be the actual reading. The word "during" was replaced with the phrase "at the end of" to signify that the intent is to take the reading at the end of each month to get an accurate monthly reading. This is because a reading taken at a time that is not at the end of the month would not provide a total for that month.

The word "weekly" replaced "once a week" in subsection (c)(2) to improve clarity by using a defined term.

Subsections (c)(4)(A) and (B) were changed to say "for facilities that are" because subsections (A) and (B) were not grammatically correct as written in the 2007 ATCM and it is necessary to specify that the requirement for owners and operators to record the surface tension applies to facilities that are required to use a chemical fume suppressant as specified in section 93102.8. The word "as" was added to subsection (c)(4)(B) so that it will be grammatically correct and consistent with subsections (c)(4)(A).

Sections 93102.12(d) and (e)

All changes to sections 943102.12(d) and (e) were for capitalization of defined terms.

Section 93102.12(f)

Purpose for Removal of Prior Section 93102.12(f)

Subsection (f) has been removed from the Proposed Amendments.

Rationale for Removal of Prior Section 93102.12(f)

This subsection has been removed because the applicable emission limit is no longer determined based on facility size.

Purpose for Changes to Section 93102.12(f)

This subsection was renumbered from (g) to (f) because of the removal of previous subsection (f). The subsection was amended to remove "initial and" and "2 and."

Rationale for Changes to Section 93102.12(f)

Since new facilities using hexavalent chromium are prohibited by the Proposed Amendments, initial compliance status reports are no longer required. Appendix 2 from the 2007 ATCM, which specifies the content of initial compliance status reports, was no longer applicable and was removed, so the reference had to be removed from subsection (f). When previous Appendix 2 was removed, Appendix 3, which specifies the content of ongoing compliance status reports, was renumbered to Appendix 2.

Section 93102.12(g)

Subsection (g) was renumbered from subsection (h) in the 2007 ATCM. The Proposed Amendments capitalize defined terms and incorporate new terminology. Subsection (g) was not substantively changed.

Section 93102.12(h)

Purpose for Changes to Section 93102.12(h)

Subsection (h) was renumbered from subsection (i) in the 2007 ATCM. The reference to "subsection 93102.6(a)" was changed to "section 93102.6(a)(1)(B)." The phrases "including the trade or brand names" was added, and the phrases "using the trivalent chromium process" and "contained in one of the components" were removed. Other changes were made to incorporate new terminology using defined terms.

Rationale for Changes to Section 93102.12(h)

The reference to "subsection 93102.6(a)" was changed to "section 93102.6(a)(1)(B)" to point to the specific provision that applies to facilities using a chemical fume suppressant with a wetting agent to comply with the requirement applicable to trivalent chromium plating. The removal of "sub" from "subsection" maintains consistency of formatting. The phrases "using the trivalent chromium process" and "contained in one of the components" were removed to improve succinctness and remove redundant language. It is necessary that the owner or operator's records include the trade or brand names of the bath components so that CARB and the District can identify the bath components and verify compliance. Defined terms were incorporated to improve clarity and consistency.

Prior Section 93102.12(j)

Purpose for Removal of Section 93102.12(j)

This subsection was removed from the Proposed Amendments.

Rationale for Removal of to Section 93102.12(j)

This subsection has been removed because Districts will have records of all notifications and reports submitted to them by a facility.

Section 93102.12(i)

Purpose of Changes to Subsection (i)

Subsection (i) was renumbered from subsection (k) of the 2007 ATCM. The term "fugitive dust" was changed to "fugitive emissions."

Rationale for Changes to Subsection (i)

This subsection was renumbered due to the removal of previous subsection (f). The term "fugitive dust" was changed to "fugitive emissions" for consistency with the corresponding requirement in section 93102.5(c)(5), which requires wastes to be stored, disposed of, recovered, or recycled in ways that do not lead to fugitive emissions (see above). Note: fugitive dust is now incorporated into the definition of fugitive emissions.

Section 93102.12(j)

Subsections (j) was only changed to renumber it from subsection (l) of the 2007 ATCM due to the removal of previous subsections (f) and (j).

14. § 93102.13 Reporting Requirements

Section 93102.13(a)

Purpose for Changes to Section 93102.13(a)

This subsection was amended to capitalize defined terms and incorporate new terminology. Subsection (a)(1)(B) was deleted, which said "The provisions in subsection 93102.13(a)(1)(A), above, do not apply if the performance test was conducted prior to July 24, 1997, was used

to demonstrate compliance with subsection 93102.4(a) or subsection 93102.6(a), and was approved by the District and the U.S. EPA."

Rationale for Changes to Section 93102.12(a)

Subsection (a)(1)(B) was removed because it is outdated; source tests from prior to July 24, 1997, are no longer relevant.

Section 93102.13(b)

Purpose for Removal of Prior Section 93102.13(b)

This subsection was removed from the Proposed Amendments.

Rationale for Removal of Prior Section 93102.13(b)

This subsection was removed because initial compliance status reports are no longer needed. New facilities that use hexavalent chromium are not permitted under the Proposed Amendments; therefore, only ongoing compliance status reports are required. Additionally, CARB does not require trivalent chromium plating facilities to submit an initial compliance status report per this subsection.

Section 93102.13(b) was only changed to capitalize defined terms and to renumber it from subsection (c) of the 2007 ATCM due to the removal of previous subsection (b).

Section 93102.13(c)

Section 93102.13(c) was only changed to capitalize defined terms and to renumber it from subsection (d) of the 2007 ATCM due to the removal of previous subsection (b).

Section 93102.13(d)

Purpose for Changes to Section 93102.13(d)

Subsection (d) was renumbered from subsection (e) of the 2007 ATCM. Throughout subsection (d), the term "trivalent chromium process" was changed to "trivalent chromium plating," and the phrase "electroplating with the trivalent chromium process" was replaced with "conducting trivalent chromium plating."

Rationale for Changes to Section 93102.13(d)

This subsection was renumbered to (d) from (e) due to the removal of previous subsection (b). The phrase "trivalent chromium process" was changed to "trivalent chromium plating" and "electroplating with the trivalent chromium process" was changed to "conducting trivalent chromium plating" to improve clarity and consistency by incorporating the defined term "trivalent chromium plating." Specific changes made to subsections (A) and (B) are discussed below.

Purpose for Changes to Section 93102.13(d)(1)(A)

For subsection (A), the phrase "pursuant to section 93102.6(a)(1)(B)" was added. The date "November 24, 2007" was replaced with the phrase "July 1, 2024 (unless this information has

been previously submitted)." In subsection (A)2., the word "a" was deleted. In subsection (A)3., the phrase "including the trade or brand names" has been added.

Rationale for Changes to Section 93102.13(d)(1)(A)

The phrase "pursuant to section 93102.6(a)(1)(B)" was added to reference the precise subsection that applies to trivalent chromium plating complying with section 93102.6(a)(1) using a wetting agent as set forth in section 93102.6(a)(1)(B). This improves clarity by specifying that these reporting requirements apply to facilities electing to comply with section 93102.6(a)(1) using the fume suppressant method pursuant to subsection (B).

The compliance date of "November 24, 2007" in the 2007 ATCM was updated to "July 1, 2024" so that facilities conducting trivalent chromium plating submit the information in this subsection to the District prior to July 1, 2024. This allows ample time for a facility to gather the required information. Submission of this information is not required for any facility that has already submitted this information to the District so that facilities are not required to submit duplicative information.

The word "a" was deleted from subsection (A)2. to accommodate the change to the defined term "trivalent chromium plating" instead of "a trivalent chromium process." The phrase "including trade or brand name" was added so that the bath components can be identified to ensure compliance with the Proposed Amendments.

Purpose for Changes to Section 93102.13(d)(1)(B)

For subsection (B), "subsection 93102.6(a)" was changed to "section 93102.6(a)(1)(A)."

Rationale for Changes to Section 93102.13(d)(1)(B)

Subsection (1)(A) was added to the reference to point precisely to the new section where the emission limitation is set forth. This improves clarity by specifying that these reporting requirements apply to facilities electing to comply with section 93102.6(a)(1) by meeting the emission limit set forth in section 93102.6(a)(1)(A).

Purpose for Changes to Section 93102.13(d)(2)

Most of the changes to section 93102.13(d)(2) capitalize defined terms and incorporate new terminology. Specific changes are discussed below.

Rationale for Changes to Section 93102.13(d)(2)

Changes to capitalize defined terms and incorporate new terminology improve clarity and consistency.

Purpose for Changes to Section 93102.13(d)(2)(A)

For subsection (A), the phrase "pursuant to section 93102.6(a)(1)(B)" was added.

Rationale for Changes to Section 93102.13(d)(2)(A)

The phrase "pursuant to section 93102.6(a)(1)(B)" was added to reference the subsection that applies to trivalent chromium plating complying with section 93102.6(a)(1) using a

wetting agent as set forth in section 93102.6(a)(1)(B). This improves clarity by specifying that these reporting requirements apply to facilities electing to comply with section 93102.6(a)(1) using the fume suppressant method pursuant to subsection (B).

Purpose for Changes to Section 93102.13(d)(2)(B)

For subsection (A), the word "section" was added and the reference to subsection (1)(A) was added to "93102.6(a)(1)(A)."

Rationale for Changes to Section 93102.13(d)(2)(B)

"Section" was added for consistency in formatting and completeness in referencing. Subsection (1)(A) was added to reference the subsection that applies to trivalent chromium plating complying with the emission limit in section 93102.6(a)(1)(A). This improves clarity by specifying that these reporting requirements apply to facilities electing to comply with section 93102.6(a)(1) by complying with the emission limitation pursuant to section 93102.6(a)(1)(A).

Section 93102.13(e)

Section 93102.13(e) has not been substantively changed other than being renumbered to from subsection (f) of the 2007 ATCM due to the removal of previous subsection (b).

15. § 93102.14 Procedure for Establishing Alternative Method(s) of Compliance

Purpose for Moving Section 93102.4(b)(3) to Section 93102.14(a)

The 2007 ATCM includes requirements regarding alternative methods of compliance in three places: section 93102.4(b)(3), section 93102.14, and Appendix 9. The Proposed Amendments moved the language in section 93102.4(b)(3) to section 93102.14 so that the requirements regarding alternative methods of compliance would all be located in section 93102.14 and Appendix 8 (which was renumbered from previous Appendix 9). There were also changes to the language in previous section 93102.4(b)(3) and previous section 93102.14 as well as additions and removals of text.

Rationale for Moving Section 93102.4(b)(3) to Section 93102.14(a)

The language that comprised section 93102.4(b)(3) of the 2007 ATCM has been moved to section 93102.14 of the Proposed Amendments to improve organization and clarity. In both the 2007 ATCM and the Proposed Amendments, section 93102.14 sets forth the requirements applicable to alternative methods of compliance. However, the 2007 ATCM also included substantive requirements in 93102.4(b)(3) related to alternative methods of compliance. This has been moved to section 93102.14 so that all of the requirements related to alternative methods of compliance are located in the same section (note: Appendix 8 lists the information that must be included in a request for an alternative method of compliance).

The specific changes to the language that has been moved from section 93102.4(b)(3) to section 93102.14(a) are discussed in detail below.

Section 93102.14(a)

Purpose for Changes to Section 93102.14(a)

Section 93102.14(a) establishes the option for using an alternative method of compliance as provided in Health and Safety Code section 39666(f). Section 39666(f) allows a facility to use alternative methods to replace requirements in an ATCM that specify method(s) to reduce, avoid, or eliminate the emissions of a toxic air contaminant (TAC). If a facility elects to pursue an alternative method of compliance, they should submit to the District alternative method(s) that will achieve equal or greater reductions in emissions of the TAC (hexavalent chromium or trivalent chromium) and associated risks.

Note: the underline/strikethrough version of the regulatory text displays the language in section 93102.4(b)(3) in strikeout and all of the language in section 93102.14 in underline since the text has been moved from section 93102.4(b)(3) to section 93102.14 and has undergone other amendments, additions, and deletions. The Purpose and Rationale sections below explain where the language is moved and provide a purpose and rationale for all changes. The provisions that modify language that was moved from section 93102.4(b)(3) are depicted below in underline/strikethrough to demonstrate the changes to language from the 2007 ATCM that was moved to a new location in the Proposed Amendments. The underline/strikethrough language provided below is intended to assist the reader in analyzing changes from the 2007 ATCM to the Proposed Amendments that have been made to provisions that were moved. This should serve as a supplementary reference since the underline strikethrough version of the regulatory text does not display these changes.

Subsection (a) contains the language that was in section 93102.4(b)(3) of the 2007 ATCM except for the changes depicted in underline strikethrough here:

(a) ~~*Requirements for Facilities Demonstrating Compliance by an Alternative Method or Methods.*~~ As provided in Health and Safety Code Section 39666(f), the oOwner or oOperator of a fFacility may submit to the ~~permitting agency~~District ~~an~~ alternative ~~method, or~~method(s)~~,~~ that will achieve an equal~~,~~ or greater amount of reduction in hHexavalent cChromium emissions and an equal, or greater reduction in risk than would be achieved by direct compliance with the requirements of section 93102.4(~~b~~c)(1) related to Chemical Fume Suppressants and ~~(b)(2)~~ section 93102.4(f)(2).

The header text "requirements for facilities demonstrating compliance by an alternative method or methods" that was included in section 93102.4(b)(3) has been removed. and changes were made to capitalize defined terms and incorporate new terminology. The word "an" was removed and the phrase "method or methods" was changed to "method(s)." Two unnecessary commas were removed.

The reference to section 93102.4(b)(1) was changed to section 93102.4(c)(1), and the phrase "related to chemical fume suppressants" was added. The reference to subsection (b)(2) was removed and replaced with "93102.6(f)(2)."

Rationale for Changes to Section 93102.14(a)

The wording in subsection (a) aligns with Health and Safety Code section 39666(f). It was amended from the requirement in subsection 93102.4(b)(3) of the 2007 ATCM to improve clarity and consistency with the statutory standard. Health and Safety Code section 39666(f) only provides a pathway for use of an alternative "where an [ATCM] requires the use of a specified method or methods to reduce, avoid, or eliminate the emissions of a [TAC]."

The Proposed Amendments replace "method or methods" with "method(s)" for succinctness and readability. This does not change the meaning of "method or methods" as used in the 2007 ATCM or in Health and Safety Code section 39666(f). A request can cover more than one method if the facility wishes to use multiple methods to replace the requirement requested to be covered by the alternative methods.

The reference to section 93102.4(b)(1) was changed to (c)(1) because the requirements that used to be numbered as section 93102.4(b)(1) of the 2007 ATCM have been renumbered to (c)(1) to accommodate the addition of new section 93102.4(b). As such, it was necessary to update the reference to section 93102.4(c)(1) to reflect the new numbering. This still refers to the same substantive provisions as the 2007 ATCM.

The addition of the phrase "related to Chemical Fume Suppressants" is necessary because the second and fifth row of Table 93102.4 in section 93102.4(c)(1) sets forth the requirements to reduce emissions from hexavalent chromium plating tanks. The requirement that applies to a facility depends on the distance of the facility to the nearest sensitive receptor and annual permitted ampere-hours. Depending on which row applies, Table 93102.4 either requires the specific method of fume suppressants to reduce emissions of hexavalent chromium or applies an emission limitation of 0.0015 mg/amp-hr. Because Health and Safety Code section 39666(f) allows an alternative method of compliance to replace a requirement to use a specific method to reduce emissions of a TAC, the facility may request to use an alternative method to the requirement to use a chemical fume suppressant if the requirements in rows two and five of Table 93102.4 apply to that facility. However, the requirements set forth in the third, fourth, sixth and seventh row of Table 93102.4 set forth an emission limit and do not specify what specific method must be used to meet that limit. Therefore, an alternative method of compliance is not needed because they may choose any method that is able to meet the limit. For example, an owner or operator of a facility less than 330 feet from the nearest sensitive receptor permitted to operate at less than 20,000 amp-hrs may request to use an alternative method instead of a chemical fume suppressant that will achieve equivalent or greater reductions of emissions of hexavalent chromium and risks associated with hexavalent chromium emissions. On the other hand, a facility less than 330 feet from a sensitive receptor with annual permitted ampere-hours of 100,000 is required to meet the emission limit of 0.0015 mg/amp-hr using any method that will achieve this limit. As such, there would not be any alternative method available because the emission limit can be achieved using any method that meets the limit.

The reference to section 93102.4(b)(2) was changed to section 93102.4(f)(2) because section 93102.4(b)(2) of the 2007 ATCM has been removed from the Proposed Amendments. The new section 93102.4(b)(2) sets forth an emission limit of 0.00075 mg/amp-hr but does not specify the method that must be used to achieve that limit. Therefore, there would not be any alternative method available because the emission limit can be achieved using any

method that meets the limit. The new requirements in section 93102.4(f)(2) of the Proposed Amendments were added to section 93102.14(a) because they require a specific method (use of an add-on air pollution control device) to meet the applicable emission limitation. If a facility can meet the applicable emission limitation through use of another method that is not an add-on air pollution control device, they can utilize an alternative method pursuant to section 93102.14.

Section 93102.14(b)

Purpose for Changes to Section 93102.14(b)

Subsection (b) establishes the procedure for an owner or operator to request to use alternative method(s) of compliance. It requires the request to contain the information listed in Appendix 8 and be submitted to the District in accordance with the District's procedures and the requirements in Appendix 1.

Section 93102.14(b) was renumbered from section 93102.14(a) of the 2007 ATCM. The language has been substantially revised from the language that was in section 93102.14(a) of the 2007 ATCM. Instead of allowing "any person" to submit a request for an alternative method of compliance, the Proposed Amendments require the owner or operator to submit the request. Instead of specifying what must be included in the request, the Proposed Amendments require the request to contain the information listed in Appendix 8, which lists the information required to be included in the request. Subsection (b) specifies that the request must be submitted to the District in accordance with the District's procedures and must be submitted pursuant to Appendix 1 (which applies to all submissions). The Proposed Amendments remove the reference for the criteria of approval identified in Table 93102.14 because Table 93102.14 has been deleted.

Rationale for Changes to Section 93102.14(b)

The numbering of section 93102.14(b) was changed from section 93102.14(a) of the 2007 ATCM to accommodate the addition of new section 93102.14(a) above it.

The changes to new section 93102.14(b) that were made to the language that was in section 93102.14(a) of the 2007 ATCM were necessary to improve clarity, organization, readability, and precision. The initial header "*Request for approval of an alternative requirement"* was removed for consistency of formatting with the rest of section 93102.14, which does not use such headers. "Method(s)" replaced "requirement" for consistency of terminology. The "(s)" is necessary because an owner or operator may include multiple proposed alternative methods in one request.

The phrase "any person may" and "the person seeking such approval" was removed and replaced with "the owner or operator" for consistency with the rest of the Proposed Amendments, which apply these types of requirements to the owner or operator rather than to "any person." The word "request" replaced "the proposed alternative requirement" because consistently using the word "request" clarifies the meaning of this language. "For approval" was removed because it is redundant.

The request must be submitted in accordance with the District's procedures, including any

applicable deadlines. Districts have their own established procedures for processing such requests that must be followed in order for a request to be considered for approval. The request must be submitted in compliance with the requirements in Appendix 1, including the attestation requirement.

The request must include all the information in Appendix 8, which is titled "Information to be Submitted to the District when Requesting Alternative Method(s) of Compliance Pursuant to Section 93102.14." The part of section 93102.14(a) in the 2007 ATCM that requires the request to include "the proposed alternative requirement, the reason for requesting the alternative requirement, and information demonstrating the criteria for approval identified in Table 93102.14 are met" was moved to number 1 in Appendix 8 (see the Appendix 8 Purpose and Rationale section). Instead of listing what must be included in the request in section 93102.14, the Proposed Amendments list all of the information that must be included in the request in Appendix 8. This improves organization and readability by placing all requirements for the contents of the request in Appendix 8 instead of having some of them located in section 93102.14 and others located in the appendix (which was numbered Appendix 9 of the 2007 ATCM).

Purpose for Removal of Prior Section 93102.14(b)

Section 93102.14(b) of the 2007 ATCM was removed and replaced by new section 93102.14(c) in the Proposed Amendments. Further, the language regarding the District receiving concurrence by CARB and U.S. EPA where concurrence is required was removed.

Rationale for Removal of Prior Section 93102.14(b)

Section 93102.14(b) of the 2007 ATCM was replaced by new section 93102.14(c), which provides additional procedure and clarity regarding the District's process in reviewing and making determinations regarding the request to use alternative method(s) of compliance (see below).

The language regarding concurrence by CARB and U.S. EPA was removed because U.S. EPA concurrence is not necessary. The requirements in the Proposed Amendments are more stringent than the requirements of U.S. EPA's Chromium Electroplating: National Emission Standards for Hazardous Air Pollutants. Concurrence is not needed in cases where California regulations are more stringent than the Federal government. Further, neither Health and Safety Code section 39666(f) nor the Proposed Amendments require that the District obtain CARB's concurrence, only that the District notify CARB of any action it proposes to take pursuant the alternative compliance plan section (see section 93102.14(e) of the Proposed Amendments). The language referring to Table 93102.14 is no longer necessary because that table has been removed from the Proposed Amendments (see below).

Section 93102.14(c)

Purpose for Changes to Section 93102.14(c)

Section 93102.14(c) replaced section 93102.14(b) of the 2007 ATCM. Section 93102.14(c) of the Proposed Amendments establishes the procedure for the District to notify the owner or operator if a request is approved, denied or incomplete. Section 93102.14(b) of the 2007

ATCM only provided the process for the District to approve an alternative requirement if it determined the application meets the criteria for approval and the District received concurrence by CARB and U.S. EPA where required (see above).

Section 93102.14(c) of the Proposed Amendments requires the District to notify the owner or operator in writing whether their request for alternative method(s) of compliance is approved, disapproved, or incomplete and if an approved alternative method is revoked.

Subsections (1)–(4) include the specific procedures and requirements for notifications of deficiency, approval, denial, and revocation, respectively (see below).

Rationale for Changes to Section 93102.14(c)

Subsection (c) is necessary to provide the procedure for the District to issue a decision regarding the request. Section 93102.14(c) replaces section 93102.14(b) of the 2007 ATCM, which only sets forth the procedure for the District to approve a request (see below). The new language was necessary to provide clarity regarding the procedure for the District to issue a notice of deficiency if the request is incomplete, approve it if it satisfies all the applicable requirements, to deny it if it does not, and to revoke it if the facility fails to adequately implement the alternatives. It is necessary for the District to notify the owner or operator of these determinations in writing to ensure that there is clarity regarding the determination regarding the request or a revocation of an approved request.

Purpose for Adding Subsection (c)(1)

Subsection (c)(1) establishes the procedure for the District to issue a notice of deficiency in writing if a request is incomplete. The owner or operator must submit a revised compliance plan that addresses these deficiencies, or the request will be disapproved. The revised request must be submitted in accordance with the District's procedures.

Rationale for Adding Subsection (c)(1)

Subsection (c)(1) is necessary to ensure that requests that are incomplete are disapproved after providing the owner or operator the opportunity to resolve deficiencies. The owner or operator must submit a revised request that addresses these deficiencies. It is necessary that the revised request be submitted in accordance with the District's procedures, including any applicable deadlines.

Purpose for Adding Subsection (c)(2)

Subsection (c)(2) provides that the District must approve the proposed alternative method(s) if the request includes the information required to be submitted pursuant to Appendix 8 and demonstrates that the criteria in subsections (A)–(D) are satisfied. The approval must specify the requirement(s) that are approved to be replaced with the alternative compliance method(s).

Subsection (A) requires that the method(s) achieve equal or greater reductions in emissions of hexavalent chromium than the requirement(s) they propose to replace. Subsection (B) requires the method achieve equal or greater reduction in risks associated with emissions of hexavalent chromium than the requirement(s) they propose to replace. Subsection (C)

requires the reductions will be achieved within the time period required by the requirement(s) they propose to replace. Subsection (D) requires the reductions that would be achieved by the alternative method(s) are enforceable.

Rationale for Adding Subsection (c)(2)

Subsection (c)(2) is necessary to establish the criteria the District must evaluate in determining whether to approve a request. The District can only approve the request if it contains all the information required to be submitted pursuant to Appendix 8 and demonstrates that the criteria in subsections (A)–(D) are satisfied. Appendix 8 lists the information and documentation required to be submitted in a request for an alternative compliance method (see the Purpose and Rationale for Appendix 8 for the necessity of the documentation required).

It is necessary for the approval to specify which requirement(s) are approved to be replaced with alternative compliance method(s) to provide clarity as to which provisions of the Proposed Amendments are being replaced. Multiple methods can be included in one request. Each method that is requested to replace each requirement must satisfy the requirements in subsections (A)–(D) to be approved. The notice of approval may specify that multiple methods are approved to replace multiple requirements if the criteria are satisfied.

Subsections (A)–(D) are necessary to align with Health and Safety Code section 39666(f), which allows for the use of alternative methods that can achieve equal or greater reduction in emissions of the TAC and risks associated with the TAC within the time period required by the applicable requirement. The method(s) must achieve at least the same reductions in emissions and risks in the same time period as the requirement(s) they replace to provide the same benefit to the community.

Purpose for Adding Subsection (c)(3)

Subsection (c)(3) requires the District to deny the request if it was not submitted as required in Appendix 1, does not include all the documentation required by Appendix 8, or does not demonstrate that all of the criteria in subsections (A)–(D) are met.

Rationale for Adding Subsection (c)(3)

If the request is not submitted following the requirements in Appendix 1, the District must deny the request. Appendix 1 contains the requirements for all submissions to the District (see below for Purpose and Rationale of Appendix 1), which includes the attestation requirement. For example, if the request does not include the required attestation statement from Appendix 1, it will be denied.

If the request does not include all of the documentation required by Appendix 8, the District must deny the request. Appendix 8 lists the documentation required to be submitted in a request for an alternative method of compliance (see below for Purpose and Rationale of Appendix 8). For example, number 4 in Appendix 8 requires documentation that demonstrates that the method is enforceable (note: this is preexisting language from the 2007 ATCM). If the request does not include documentation that demonstrates that the method is enforceable, the District must deny the request.

The District must deny the request if it request does not demonstrate that the criteria in subsections (c)(2)(A)–(D) are met. For example, if the request does not demonstrate that the alternative method will achieve equal or greater reductions in emissions or risks than the requirement(s) it is replacing, the District must deny the request. The request will also be denied if it does not demonstrate that the reductions that will be achieved by the alternative method(s) will be enforceable and will be achieved within the time period required by the requirements they propose to replace. This is necessary to ensure that the alternative method will be as protective of the surrounding community as the requirement(s) it is replacing. These requirements are consistent with Health and Safety Code section 39666(f).

Purpose for Adding Subsection (c)(4)

Subsection (c)(4) requires the District to revoke the approval if the alternative method(s) are not adequately implemented or if subsequent source tests or monitoring demonstrates that the method(s) do not achieve the reductions in emissions or risk as required.

Rationale for Adding Subsection (c)(4)

This is necessary to align with Health and Safety Code section 39666(f). It ensures that the alternative method(s) actually achieve the reductions in emissions and risks equal to or greater than the reductions that would have been achieved by the requirement(s) the method(s) replace. This is necessary to ensure that the alternative method will be as protective of the surrounding community as the requirement(s) it is replacing. This language is mirrored from Health and Safety Code section 39666(f).

Purpose for Removal of Prior Section 93102.14(c)

Section 93102.14(c) of the 2007 ATCM was removed. This section required Districts to submit alternative requirements to CARB and U.S. EPA for their review and concurrence. That concurrence was based on the requirements of the 2007 ATCM identified in table 93102.14, which has been deleted (see below).

Rationale for Removal of Prior Section 93102.14(c)

U.S. EPA concurrence is not necessary because requirements in the Proposed Amendments are more stringent than the requirements of U.S. EPA's Chromium Electroplating: National Emission Standards for Hazardous Air Pollutants. Concurrence is not needed in cases where California regulations are more stringent than the Federal government. Further, neither Health and Safety Code section 39666(f) nor the Proposed Amendments require that the District obtain CARB's concurrence, only that the District notify CARB of any action it proposes to take pursuant the alternative compliance plan section (see below).

Section 93102.14(d)

Purpose for Adding Section 93102.14(d)

Section 93102.14(d) explains that a facility operating under an approved alternative method(s) is exempted from the requirement(s) identified in the notice of approval as being replaced with the alternative method(s). However, it confirms that a facility operating under an approved alternative method(s) still must comply with all other applicable requirements of

the Proposed Amendments, including applicable source test requirements.

Rationale for Adding Section 93102.14(d)

Subsection (d) is necessary to clarify that operating under an approved alternative compliance method exempts the facility from compliance with the requirements that are identified in the notice of approval as being approved to be replaced by the alternative method(s). The "(s)" is included because the notice of approval may approve multiple methods (see above).

The latter half is included to clarify that the approved alternative method(s) only replace the specified requirement(s) identified in the notice of approval and that all other applicable requirements in the Proposed Amendments continue to apply. The language "including the applicable source test requirements in section 93102.7" was added to clarify to the regulated community that the source test requirements (as well as all other applicable requirements) will apply to facilities operating under an approved alternative requirement method.

Section 93102.14(e)

Purpose for Changes to Section 93102.14(e)

Subsection (e) was renumbered from subsection (d) of the 2007 ATCM. This subsection was changed to remove the heading "Reports of Approved Alternative Requirements to U.S. EPA and ARB." The "U.S. EPA and" was deleted. The following language was added "the notice for all determinations it proposes to issue pursuant to section 93102.14(c)" instead of "all approved alternative requirements." The phrase "prior to issuing the notice of the determination" replaced "at a mutually agreed upon frequency." The following sentence was added: "At CARB's request, the District shall provide the owner or operator's request(s) submitted pursuant to section 93102.14(b) to CARB."

Rationale for Changes to Section 93102.14(e)

The subsection was renumbered due to the addition and deletion of various subsections within 93102.14. Section 93102.14(d) of the 2007 ATCM required the district to provide *U.S. EPA and* CARB copies of all *approved* alternative requirements "at a mutually agreed upon frequency." Section 93102.14 (e) of the Proposed Amendments requires the District to provide CARB copies of the notice issuing their determination regarding alternative methods of compliance issued pursuant to section 93102.14(c).

These changes are consistent with Health and Safety Code section 39666(f), which requires the District to "notify the state board of any action it proposes to take pursuant to [the alternative compliance method] provision." The Proposed Amendments clarify what records the District is required to provide to CARB and when the District must provide them. This ensures that CARB will be sent copies of the notices prior to action being taken to approve, deny, or revoke the alternative methods of compliance.

The requirement to submit to U.S. EPA was removed because U.S. EPA is no longer a concurring agency on this regulation and any alternative methods of compliance will be regarding conditions in the Proposed Amendments that are not U.S. EPA requirements. U.S. EPA concurrence is not necessary because requirements in the Proposed Amendments

are more stringent than the requirements of U.S. EPA's Chromium Electroplating: National Emission Standards for Hazardous Air Pollutants. Concurrence is not needed in cases where California regulations are more stringent than the Federal government. Further, Health and Safety Code section 39666(f) does not require that the District obtain CARB's concurrence, only that the District notify CARB of any action it proposes to take pursuant the alternative compliance plan section.

The sentence requiring Districts to submit to CARB at CARB's request any requests owners or operators submit pursuant to section 93102.14(b). This will allow CARB to stay informed of the specific details regarding alternative methods of compliance since those details would be set forth in the request submitted by the owner or operator seeking to use an alternative method of compliance.

Prior Section 93102.14(e)

Purpose for Removal of Prior Section 93102.14(e)

Section 93102.14(e) of the 2007 ATCM regarding "approval criteria" was removed. Section 93102.14(e) of the 2007 ATCM provided that nothing in this section prohibits a permitting agency from establishing approval criteria more stringent than that required in Table 93102.14.

Rationale for Removal of Prior Section 93102.14(e)

Section 93102.14(e) of the 2007 ATCM was removed because it is no longer applicable since Table 93102.14 was removed (see below).

Prior Section 93102.14(f)

Purpose for Removal of Prior Section 93102.14(f)

Section 93102.14(f) of the 2007 ATCM was removed. It provided that waivers obtained from U.S. EPA prior to October 24, 2007, remain in effect until the effective dates of the specified requirements become effective.

Rationale for Removal of Prior Section 93102.14(f)

Subsection (f) was removed because any waiver granted by U.S. EPA prior to October 24, 2007, would not apply to requirements that became effective after 2007. Any waiver that was granted by U.S. EPA per this subsection would have been in effect until the applicable effective dates of the 2007 ATCM and are therefore no longer relevant. U.S. EPA has not granted any waivers since 2007 and therefore the condition does not need to be included.

Purpose for Removal of Table 93102.14

Table 93102.14 was removed.

Rationale for Removal of Table 93102.14

Table 93102.14 was removed because it is no longer applicable. Health and Safety Code section 39666(f) only requires alternative method(s) of compliance where an ATCM requires

the use of *specified method(s)* to control emissions of the TACs. Section 93102.14(a) identifies the provisions that require specific methods to control emissions (see above). The requirements listed in Table 93102.14 cannot be replaced by alternative method(s) of compliance because they are not covered by Health and Safety Code section 39666(f) or the corresponding requirements in section 93102.14 of the Proposed Amendments. The table included applicability, emission limits, source testing and other testing protocols, parameter monitoring, inspection and maintenance, operation and maintenance, recordkeeping, and reporting. These are not specific methods to control emissions of a TAC. For example, the applicability provisions cannot be replaced by alternative methods since the applicability section is not a specified method to reduce emissions. Emission limits are not specific methods and alternatives would not be available because the owner or operator may elect to use any method that meets the limit. Requirements for testing, monitoring, inspection, maintenance, recordkeeping, and reporting are methods to ensure compliance, not specific methods to reduce emissions, so alternative method(s) of compliance are not available to replace these requirements.

16. § 93102.15 Requirements Relating to Chrome Plating Kits.

The title of section 93102.15 was changed to incorporate the new defined term "chrome plating kits" instead of "chromium electroplating or chromic acid anodizing kits."

Section 93102.15(a)

Purpose for Changes to Section 93102.15(a)

Section 93102.15(a) was amended to incorporate new terminology and to delete the phrase "except as provided in subsection (b)."

Rationale for Changes to Section 93102.15(a)

The amendment was necessary because the exemption in subsection (b) has been removed from the Proposed Amendments.

Section 93102.15(b)

Purpose for Removal of Prior Section 93102.15(b)

Section 93102.15(b) of the 2007 ATCM, which provided an exemption for the sale of chrome plating kits to a permitted chrome plating facility, has been removed from the Proposed Amendments.

Rationale for Removal of Prior Subsection 93102.15(b)

This section was removed because chrome plating should be conducted in a proper chrome plating tank not using a chrome plating kit to reduce emissions. Facilities that conduct chrome plating are not allowed to bypass control equipment and ampere-hour limits by using chrome plating kits.

Purpose for Changes to Section 93102.15(b)

Section 93102.15(b) was renumbered from subsection (c) of the 2007 ATCM due to the

removal of the previous subsection (b). It has been amended to incorporate new terminology and to add "in California." The following language was removed: "unless these activities are performed at a permitted facility that complies with the requirements of this ATCM."

Rationale for Changes to Section 93102.15(b)

This amendment was necessary because CARB is prohibiting the use of chrome plating kits in California and has removed the exemption for use at chrome plating facilities that was in section 93102.14(b) of the 2007 ATCM. CARB is ending this practice because all chrome plating should be conducted in a proper chrome plating tank to ensure that emissions are controlled. Facilities that conduct chrome plating are not allowed to bypass control equipment and ampere-hour limits by using chrome plating kits.

Section 93102.15(d)

Purpose for Removal of Section 93102.15(d)

Section 93102.15(d) was removed from the Proposed Amendments. The 2007 ATCM used subsection (d) to set forth a definition for the term "chromium electroplating or chromic acid anodizing kit."

Rationale for Removal of Section 93102.15(d)

This definition was removed and replaced with a definition of "chrome plating kit" in the definitions section of the Proposed Amendments (see above). The new definition is included in section 93102.3 to improve organization and so that all definitions are located in the definitions section of the Proposed Amendments.

17. § 93102.16 Appendices 1 through 9

The first sentence in section 93102.16 was only changed to incorporate the updated title to the Proposed Amendments, which spells out the word "electroplating" instead of using the shorthand "plating."

Appendix 1

Purpose for Adding Appendix 1

Appendix 1 was added to the Proposed Amendments to specify procedures for submitting information to CARB or the District. Appendix 1 requires that all documentation submitted pursuant to the Proposed Amendments to CARB or the District: (1) be written in the English language and (2) contain the following statement of accuracy signed by the owner or operator or responsible official: "I certify under penalty of perjury under the laws of the State of California that the information provided is true, accurate, and complete." Documentation submitted to CARB must be submitted to the physical address or the email address listed. Documentation submitted to the District must be submitted to the physical address listed at link provided or emailed to the email address designated by the District.

Rationale for Adding Appendix 1

Appendix 1 was added to specify the requirements and methods of submittals and to provide the addresses for submitting information to CARB or the District. This applies to all provisions in the Proposed Amendments that require submittal of documentation to CARB or the District. Documentation submitted must be written in English so that CARB or the District can understand the submittal without translation. The requirement to include a statement of accuracy with all submittals that is signed by the owner or operator of the facility, or the responsible official, is necessary to certify under penalty of perjury that the information provide is true, accurate, and complete. This provides CARB or the District the assurance that the information provided is true, accurate and complete, which safeguards the integrity of the implementation of the Proposed Amendments. The mail and email addresses for CARB and the Districts were included to specify where submittals should be sent, which can be sent either via physical mail or email.

Appendix 2

Purpose for Changes to Appendix 2

Appendix 2 was renumbered from Appendix 1 of the 2007 ATCM to accommodate the addition of Appendix 1. Additional changes were made to incorporate new terminology. The reference to subsection (a) of section 93102.13 was added.

Rationale for Changes to Appendix 2

No substantive changes were made to Appendix 2. The reference to subsection (a) was added to provide additional clarity to the reader regarding the applicable subsection of section 93102.13 that applies.

Purpose for Removal of Previous Appendix 2

Appendix 2 of the 2007 ATCM, which specified the content of initial compliance status reports, was removed.

Rationale for Removal of Previous Appendix 2

Appendix 2 of the 2007 ATCM was removed because it was not applicable to the Proposed Amendments. This appendix set forth the contents of initial compliance status reports. Because the Proposed Amendments prohibit new facilities using hexavalent chromium from being constructed or operated after January 1, 2024, initial compliance status reports are no longer required. As such, the version of Appendix 2 in the 2007 ATCM was no longer applicable and was removed. Note that the source tests required upon initial start-up of a modified facility pursuant to section 93102.7(a)(2) are not initial compliance status reports and are covered by the source test requirements set forth in Appendix 2 of the Proposed Amendments.

Appendix 3

Purpose for Changes to Appendix 3

Appendix 3 provides the contents of ongoing compliance status reports. The reference in the first sentence to section 93102.13(c) in the 2007 ATCM was changed to subsection (b).

Number 2 was amended to remove the phrase "required by Appendix 2." The word "section" was added to number 9.

Rationale for Changes to Appendix 3

The reference to section 93102.13 was changed from subsection (c) in the 2007 ATCM to subsection (b) to reflect changes in numbering in section 93102.13 in the Proposed Amendments.

This phrase "required by Appendix 2" was removed because the version of Appendix 2 in the 2007 ATCM has been removed. Although initial compliance reports are not required by the Proposed Amendments, notification of initial compliance status that was already submitted to the District includes this information.

The word "section" was added to "section 93102.5(b)" for completeness and consistent formatting with the rest of the Proposed Amendments.

Appendix 4

Purpose for Removal of Previous Appendix 4

Appendix 4 of the 2007 ATCM, which set forth the requirements for notification of construction reports, was removed.

Rationale for Removal of Previous Appendix 4

This appendix was no longer applicable because the Proposed Amendments removed the requirement for submitting construction reports.

Purpose for Changes to Appendix 4

Appendix 4 was only minorly changed to capitalize defined terms, incorporate new terminology, and to add the word "the" and commas.

Rationale for Changes to Appendix 4

These changes were necessary for consistency in capitalization and use of defined terms and to improve grammar by adding the word "the" and commas when needed.

Appendix 5

Appendix 5 was only changed renumber it from Appendix 6 of the 2007 ATCM and to incorporate shorthand terminology "District" instead of "air pollution control or air quality management district." No substantive changes were made.

Appendix 6

Purpose for Changes to Appendix 6

Appendix 6 was only changed to renumber it from Appendix 7 of the 2007 ATCM and to use the defined term "enclosed hexavalent chromium plating tanks" instead of "enclosed hexavalent chromium plating facilities."

Rationale for Changes to Appendix 6

Using the defined term "enclosed hexavalent chromium plating tanks" improves clarity and consistency but does not change the substantive requirement. This change improves clarity because the requirements apply to enclosed hexavalent chromium plating *tanks* not enclosed hexavalent chromium plating *facilities*. There may be facilities operating enclosed hexavalent chromium plating tanks in addition to other types of tanks.

Appendix 7

Purpose for Changes to Appendix 7

Appendix 7 was renumbered from Appendix 8 of the 2007 ATCM to account for the removal of previous Appendix 4. The words "its" and "inside of" were added to number 1. The word "the" and commas were added throughout Appendix 7.

The information regarding "calculations for surface tension" were not substantively changed.

Rationale for Changes to Appendix 7

The minor changes to number 1 were made to improve clarity. The 2007 ATCM said "set up stalagmometer in stand in a fume hood." This substantive requirement was not changed, but it improves clarity to say "set up stalagmometer, in its stand, inside of a fume hood." The word "the" was added to numerous locations and commas were added to improve grammar, but these changes were not substantive.

Appendix 8

Purpose for Changes to Appendix 8

Appendix 8 was renumbered from Appendix 9 in the 2007 ATCM. The title was changed to reference section 93102.14, which is the section that sets forth the requirements for use of an alternative method of compliance.

Number 1 in the 2007 ATCM, which required submission of a performance test, was removed. A new number 1 was added, which requires the owner or operator's submission to identify the specific requirement(s) in Table 93102.4 or in section 93102.4(f)(2) that the owner or operator is proposing to replace with alternative method(s) of compliance.

Number 2 was amended to add "(s)" after "method," add the word "will," and remove the "s" from "achieves." The phrase "applicable emission rate in Table 93102.4" was changed to "that the alternative method(s) seek to replace."

Number 3 was amended to add an "(s)" to "method(s)" and remove the "s" in "results. The phrase "applicable emission rate in Table 93102.4" was changed to "requirement(s) that the alternative method(s) seek to replace." The following sentence was removed: "A facility using in-tank controls only must be modeled as a volume source and the resulting risk compared to the same facility modeled as a point source."

Number 4 was amended to add "reductions to be achieved by each of the alternative compliance methods included in the request are" and to capitalize "enforceable," which is a defined term in the Proposed Amendments. The "and" was removed and the following

phrase was added to the end: "and a proposed method of verification (e.g., a source test) for each alternative method of compliance."

Number 5 was added to require owners or operators to submit a proposed timeline for implementation of each alternative method(s) of compliance.

Rationale for Changes to Appendix 8

These amendments clarify the information required to be submitted with a request for an alternative method of compliance. This information is necessary for a District to determine whether to approve or deny the request and aligns with the requirements in section 93102.14 and Health and Safety Code section 39666(f).

Number 1 was added because the request must specify which requirements that the alternative compliance method proposes to replace. This is necessary so that the District can evaluate whether the proposed alternative will achieve the same emissions and risk reductions in the same timeframe as would have been achieved through compliance with the replaced requirement(s). The request must identify the requirement(s) intended to be replaced.

Number 1 was changed for consistency with changes to section 93102.14. The Proposed Amendments add "(s)" after "method," add the word "will," and remove the "s" from "achieves" to clarify that, if multiple alternative methods are proposed, the request must demonstrate that each of the proposed methods achieves equal or greater reductions as the requirements they seek to replace. The phrase "applicable emission rate in Table 93102.4" was changed to "requirement(s) that the alternative method(s) seek to replace" for consistency with section 93102.14.

Number 3 was amended to add an "(s)" to "method(s)" and remove the "s" in "results" for consistency with section 93102.14. The phrase "applicable emission rate in Table 93102.4" was changed to "requirement(s) that the alternative method(s) seek to replace" for consistency with section 93102.14. The sentence regarding in-tank controls was removed because it was not necessary.

Number 4 was amended to add "reductions to be achieved by each of the alternative compliance methods included in the request" and to capitalize "enforceable." If a request seeks to implement multiple alternative compliance methods, the documentation must demonstrate that each of the methods are enforceable. Although the 2007 ATCM required documentation to demonstrate that the methods are enforceable, there was no definition of the term "enforceable." The Proposed Amendments added a definition of the term "enforceable" (see Purpose and Rationale for the definition). It is necessary for the request to demonstrate that the emission reductions to be achieved by the alternative method are enforceable to be consistent with Health and Safety Code section 39666(f), which requires that these reductions be enforceable. This ensures that CARB or the District will be able take enforcement action if the alternative method does not achieve the required reductions.

Number 4 was also amended to add the following phrase to the end: "a proposed method of verification (e.g., a source test) for each alternative method of compliance" because the District will need to verify that the alternative method complies with the Proposed

Amendments. For example, the facility may propose to use a source test to demonstrate that the alternative method of compliance is achieving equal or greater reductions in emissions than the requirement it replaces. It is necessary that the request includes a proposed method of verification for all proposed methods requested so that the District can verify compliance of each method.

Number 5 was added to require submission of the proposed timeframe for implementation for each alternative method of compliance. Section 93102.14 and Health and Safety Code section 39666(f) require that the alternative method(s) achieve equal or greater reductions in emissions and risks within the timeframes required by the applicable requirement. For example, if the request seeks to replace the more stringent emission limit applicable beginning on January 1, 2026, pursuant to section 93102.4(c)(2), the request must demonstrate that the alternative method of compliance would be implemented by January 1, 2026, and that equal or greater reductions in emissions and risks would be achieved.

Appendix 9

Purpose for Addition of Appendix 9

Appendix 9 was added to set forth specific thresholds for Tier II and Tier III tanks.

Number 1 specifies that, to be considered a Tier II tank, hexavalent chromium concentrations must remain in the concentration range for the specified temperature in the accompanying table. If a tank exceeds the hexavalent chromium concentration for the corresponding temperature, it will be considered a Tier III tank. The table provides the temperature ranges and hexavalent chromium concentrations applicable to Tier II and Tier III tanks, respectively.

Number 2 provides that chrome plating tanks with hexavalent chromium concentration exceeding 1,000 ppm are considered Tier III tanks regardless of operating temperature.

Number 3 provides that air sparged tanks with hexavalent chromium concentration exceeding 1,000 ppm are considered Tier III Tanks regardless of operating temperature.

Number 4 provides that one tank at a facility is not subject to the requirement to vent a Tier III tank to an add-on air pollution control device if the tank meets the following requirements: (a) the surface area is less than or equal to four square feet; (b) the hexavalent chromium concentration is less than or equal to 11,000 ppm; (c) the tank is operated and permitted at less than or equal to 210° F; (d) the tank is operated at a temperature between 170-210° F for less than or equal to two and one-half hours per week with a temperature data logger logging the duration of time and temperature of the tank; and (e) the tank complies with the tank cover requirements in section 93102.4(f).

Rationale for Addition of Appendix 9

Appendix 9 was added to establish the thresholds that classify tanks as Tier II and Tier III tanks. This is similar to Appendix 10 of South Coast AQMD Rule 1469. Modifications were made to the language from Appendix 10 of Rule 1469 to improve clarity and maintain consistency of terminology in the Proposed Amendments. However, the conditions in Appendix 9 were not substantively changed from Appendix 10 of Rule 1469 as CARB agrees

with the criteria developed by South Coast AQMD for determining the specific Tier for each tank. CARB intends to implement these criteria statewide for consistency with South Coast AQMD, where most chrome plating facilities are located. Changes to the classification criteria for Tier tanks could potentially require facilities that are already complying with Rule 1469 to have to modify their existing controls because the applicable requirements depend on the Tier of the tank. For example, Tier II tanks must comply with section 93102.4(g), while Tier III tanks must comply with section 93102.4(f). This could create additional costs that were not accounted for in the cost analysis of this document.

Number 1 in the appendix establishes that, to be considered a Tier II tank, the hexavalent chromium concentration must be within the ranges indicated on the table based on the corresponding temperature. For example, a tank operating at 141 degrees Fahrenheit and that has a hexavalent chromium concentration of 6,000 parts per million (ppm) would be considered a Tier II tank. If that tank operates at a temperature of 145 degrees Fahrenheit and a concentration of 6,000 ppm of hexavalent chromium, it would be considered a Tier III tank.

Number 2 specifies that any chrome plating tank with a concentration higher than 1,000 ppm is considered a Tier III tank regardless of operating temperature. This is because the electrolytic process in chrome plating operations generates hexavalent chromium fumes that are emitted from the tank regardless of temperature. Chrome plating tanks above 1,000 ppm are expected to have a high enough concentration of hexavalent chromium emissions to require the more stringent Tier III tank standards. Note that the table in number 1 is still applicable to Tier II tanks (which are not chrome plating tanks) and Tier III tanks that are not chrome plating tanks. The distinction of chrome plating tanks from other types of tanks is needed because chrome plating tanks generate additional hexavalent chromium fumes and need to be subject to more stringent requirements.

Number 3 specifies that air sparged tanks are considered Tier III tanks if they have a hexavalent chromium concentration above 1,000 ppm regardless of operating temperature. This is because the use of air sparging to mix the solution in the tank introduces air into the tank. The air bubbles travel up through the tank, and the resulting agitation mixes the solution. The air emitted out of the tank has the potential to release hexavalent chromium containing solution. Air sparged tanks above 1,000 ppm are expected to have a high enough concentration of hexavalent chromium emissions to require the more stringent Tier III tank standards. Air sparged is a term commonly known by industry to mean mixed using the bubbling of air from the bottom of the tank to the surface.

Number 4 exempts a facility from having to vent a single tank at the facility if the tank meets all of the specific conditions in subsections (a)–(e). This exemption can only be used for one tank to prevent facilities from circumventing Tier III requirements by installing multiple tanks that meet this exemption. The requirements listed in (a)–(e) mirror the corresponding list in Appendix 10 of Rule 1469. The combination of all of these requirements creates a very limited exception for one tank that ensures that the tank has a low potential for emissions of hexavalent chromium. If any one of these conditions is not met, the exemption does not apply.

V. Benefits Anticipated from the Regulatory Actions

A. Health Benefits

The intent of the Proposed Amendments is to reduce hexavalent chromium emissions from chrome plating facilities in California. Hexavalent chromium is one of the most carcinogenic TACs, and its cancer potency factor is about 500 times higher than diesel exhaust. In addition, per OEHHA or U.S. EPA Integrated Risk Information System (IRIS) risk values, hexavalent chromium is approximately 1,700 or 30 times more potent than ethylene oxide.

The Office of Environmental Health Hazard Assessment (OEHHA) evaluates and develops health values from TACs, such as diesel exhaust and hexavalent chromium, to determine their level of toxicity and whether they cause carcinogenic or noncarcinogenic health impacts. CARB staff applied OEHHA's published health values to perform health risk assessments (HRA) analyzing emissions from chrome plating facilities sources and estimating the potential carcinogenic and noncarcinogenic impacts.

An HRA is an evaluation or report that a risk assessor (e.g., CARB, district, consultant, community, or facility operator) develops to describe the potential a person or population may have of developing adverse health effects from exposure to an emissions source. CARB staff conducted an HRA to evaluate the potential cancer and noncancer health benefits of the Proposed Amendments, which reduce hexavalent chromium emissions from chrome plating facilities. Additional information regarding the emission rates, air dispersion model configuration, and the methodology for estimating potential cancer and noncancer impacts for the HRA are found in Appendix F.

Currently there is no established and approved methodology for CARB to use to quantify a monetized benefit for reducing cancer risks or noncancer health impacts from hexavalent chromium emissions or other TACs. In contrast, there are established and approved methodologies for monetizing noncancer impacts from emissions of PM2.5, which have been applied by CARB in the context of regulations that reduce emissions from diesel combustion. For example, CARB has recently adopted regulations related to on- and off-road mobile sources with diesel combustion related emissions (e.g., Commercial Harbor Craft, Transportation Refrigeration Units, and several diesel truck regulations). The pollutants of concern from these emission sources are directly emitted PM2.5 and secondarily formed PM2.5 from NOx (including nitrogen dioxide), which are directly related to health outcomes like mortality, cardiovascular and respiratory illness, and hospital visits. The health benefits from reducing emissions of PM2.5 are monetized by correlating the costs of noncancer health outcomes caused by exposure to PM2.5. CARB is aware of the need to quantify the economic impacts of emissions of TACs and is currently working to develop methods to monetize potential cancer impacts.

Since toxic substances, such as hexavalent chromium, do not have the associated noncancer impacts from PM2.5, the noncancer health benefits from emissions reductions cannot be monetized using the methodologies applied to diesel emissions. Therefore, this document does not include an assessment of the monetary benefit from cancer and noncancer health effects.

1. Reduction in Potential Cancer Risk

The HRA evaluates the potential cancer risk associated with emissions from chrome plating facilities. Decorative chrome plating facilities typically provide bright, clean finishes to objects such as wheel rims, car bumpers, and plumbing fixtures. Functional chrome plating facilities include facilities with hard chrome plating or chromic acid anodizing operations, which produce smooth, wear-resistant surfaces for parts that are designed to operate under extreme conditions (e.g., industrial parts, aircraft landing gear).

Chrome plating facilities range in size depending on the type of operation. Due to the variability in size and operation of plating facilities, the assumptions used to determine potential cancer risks are not based on a specific facility, but rather a range of generic facilities that were developed using building dimensions and release parameters (e.g., stack heights) generally representative of the chrome plating industry. This information was taken from source tests data and aerial imagery. These generic facilities are used to help evaluate the potential impacts from exposure to hexavalent chromium emissions and to help inform the effectiveness of control strategies to minimize those emissions.

Although CARB cannot adequately quantify fugitive emissions, staff used their best judgement to estimate emissions and potential cancer risk. Fugitive emissions and potential cancer risk are discussed in Section VI.(B)(3) and Appendix F. Fugitive emissions include emissions coming off uncontrolled tanks and emissions that are not captured by a tank hood. These emissions would be emitted into the atmosphere through windows, doors, vents, or other openings. They do not include emissions that pass through an add-on air pollution control device, which are characterized as stack emissions in the HRA. Ambient air monitoring and sampling conducted by CARB's Monitoring and Laboratory Division and South Coast AQMD in the South Coast Air Basin in recent years suggests that fugitive emissions could be a significant contributor to near source hexavalent chromium concentrations. For this reason, the HRA likely underestimates the health impacts from chrome plating operations. This means that the reduction in potential cancer risk and noncancer health impacts from the Proposed Amendments may be higher than what is presented in this section.

The trend of concentrations resulting from the emission of hexavalent chromium from chrome plating operations at different distances indicate that emissions from chrome plating facilities are localized. This means that estimated cancer risks are highest at receptors closest to the emission source and drop quickly moving away from the source.

Figure V.1 Percent of Maximum Predicted Concentration of Hexavalent Chromium at Increasing Distances from the Source

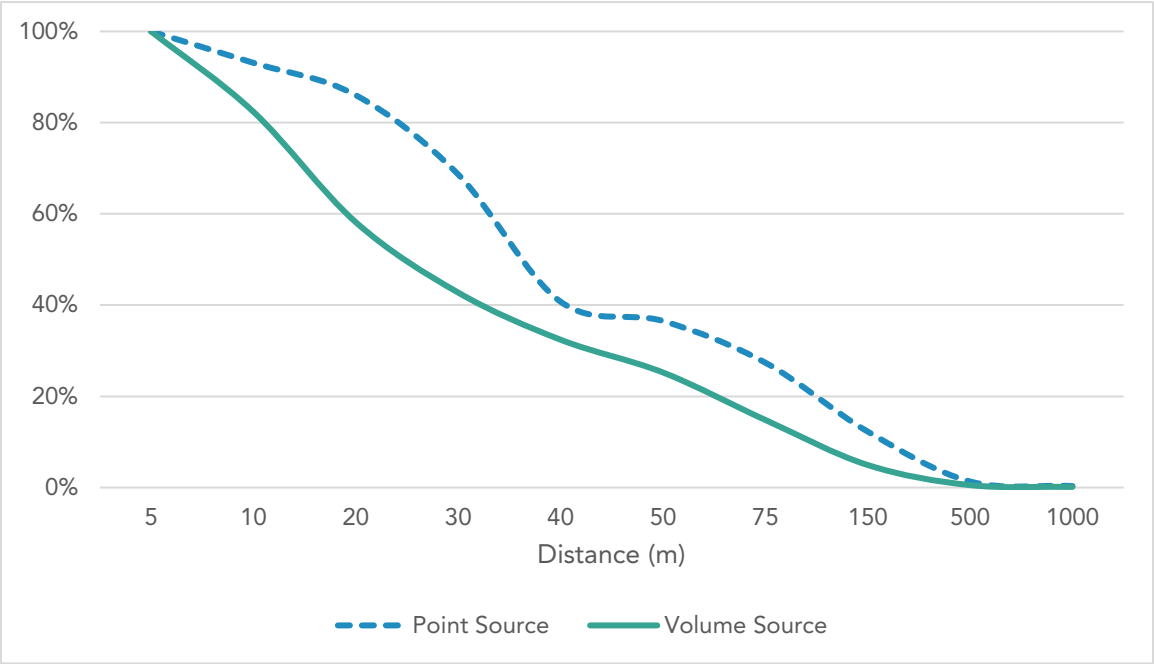
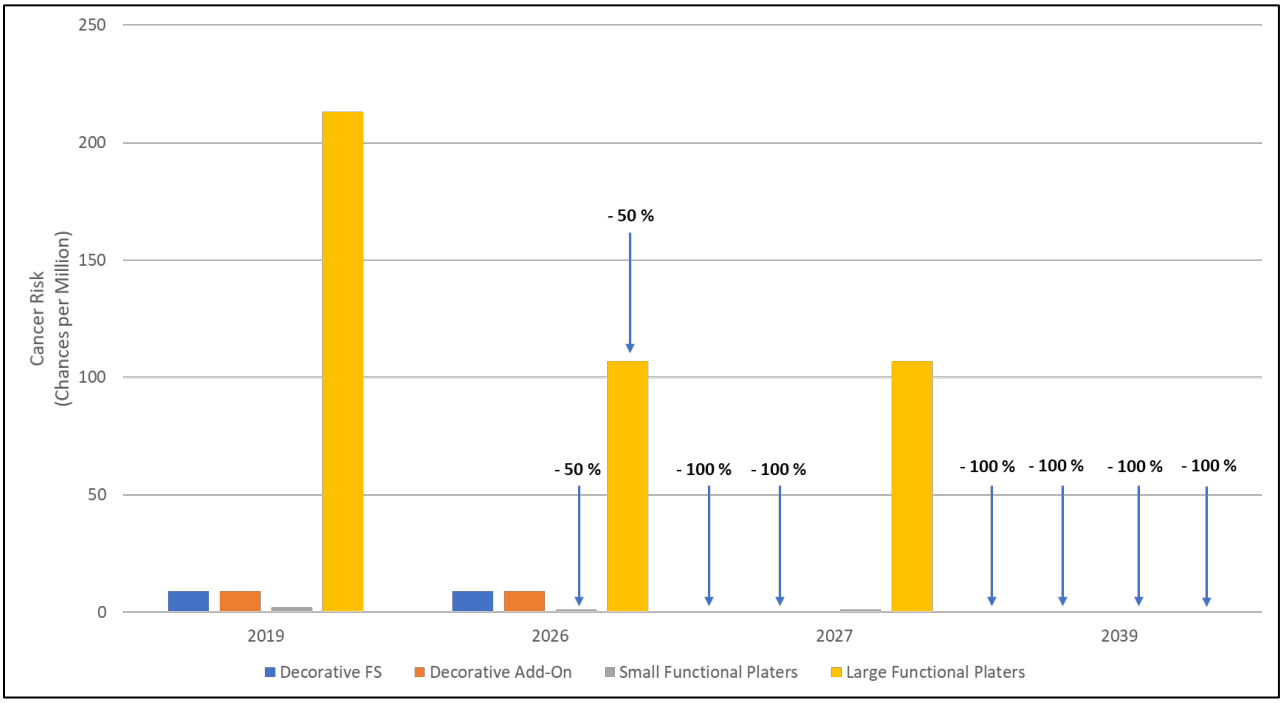


Figure V.1, above, depicts how concentrations of hexavalent chromium are reduced as they are dispersed from a generic decorative or functional chrome plating facility. As shown in the figure, concentrations of hexavalent chromium drop by about 60 percent at a distance of 50 meters downwind from the source.

Figure V.2., below, summarizes the progressive reductions of potential individual resident cancer risks from the 2019 baseline to year 2039, under the Proposed Amendments. The estimated cancer risks associated with emissions of hexavalent chromium are calculated at near-source receptors downwind from the edge of facility building. In 2019, the potential cancer risk from large functional platers is estimated at about 213 chances per million, and the cancer risks from decorative and small functional chrome platers are estimated to be less than 10 chances per million.

Figure V.2 Potential Individual Resident Cancer Risk and Risk Reduction for Chrome Plating Operations



[1] Potential individual resident cancer risk estimates are based on a 30-year exposure duration using the Risk Management Policy (RMP) derived method (95th percentile/80th percentile daily breathing rates (DBR)). FAH equals 1 for age bins <16 years and 0.73 for age bin 16-30 years. All numbers are rounded.
[2] Chrome plating operations are based on the highest level of modeled amp-hour throughput per plating type and control. Potential cancer risk estimates are from the closest receptor. For more details, please see Appendix F.

After implementation of the Proposed Amendments in 2026, the potential individual resident cancer risks from small and large functional platers are anticipated to be reduced by 50 percent. In 2027, after implementation of the Proposed Amendments, the potential individual resident cancer risks from all sizes of decorative plating facilities are anticipated to be reduced by 100 percent due to the phase out of hexavalent chromium in decorative chrome plating facilities. The potential individual resident cancer risks for both small and large functional platers are anticipated to be reduced by approximately 50 percent due to control measures and other requirements in the Proposed Amendments. In 2039, potential individual resident cancer risks from all chrome plating operations in California are anticipated to be reduced by 100 percent compared to the 2019 baseline year.

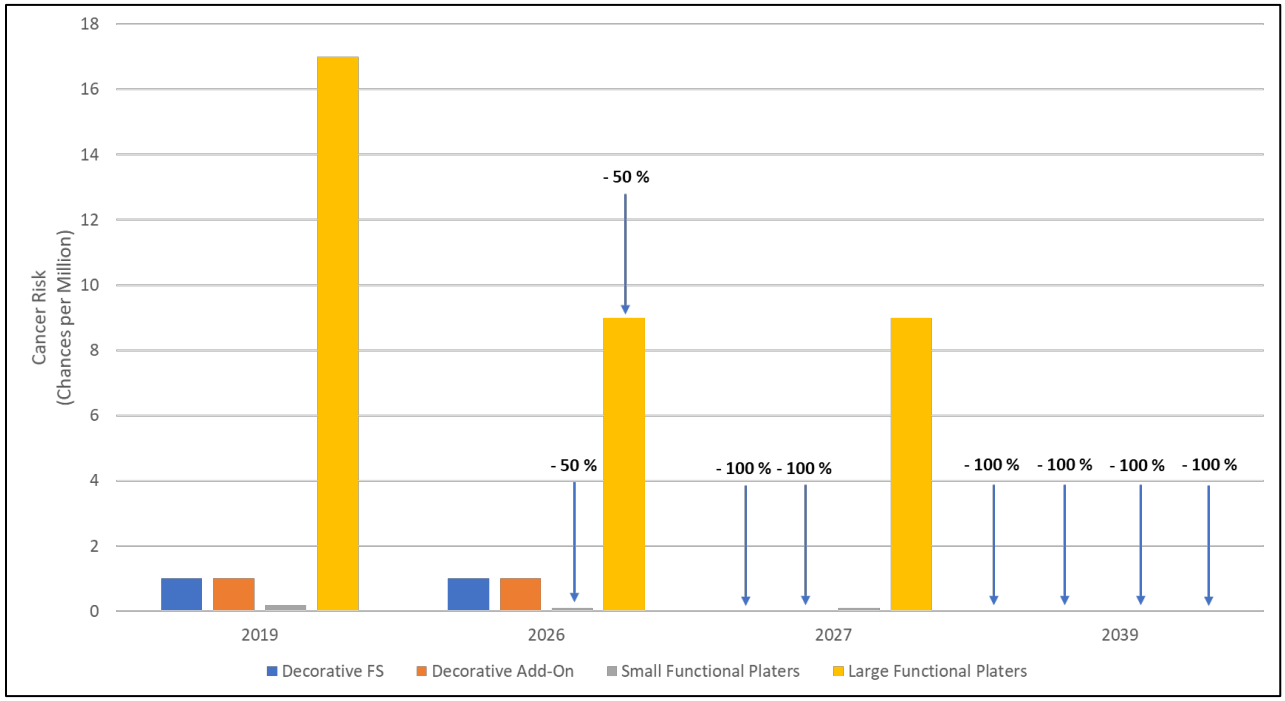
a) Off-Site Worker Cancer Risk

For the evaluation of potential multipathway off-site worker cancer risk associated with emissions of hexavalent chromium, staff also followed the OEHHA Guidelines. The guidelines assume that a worker at a nearby worksite is exposed to the emissions for 25 years, 250 days per year, and 8 hours per day. For the 2019 baseline, the estimated potential cancer risks range approximately from less than one to 17 chances per million, depending on the level of plating operations at the facility. Figure V.3 presents these results.

The estimated potential cancer risk for off-site workers has a similar trend in comparison to the residential cancer risk estimates. Figure V.3 shows that after implementation of the Proposed Amendments in 2026, the estimated off-site worker cancer risk from decorative chrome plating facilities is anticipated to be reduced by 100 percent from the baseline; and estimated off-site worker cancer risk from functional chrome plating facilities is anticipated to be reduced by 50 percent. In 2039, the estimated cancer risk for off-site workers from all chrome plating operations in California is anticipated to be reduced by 100 percent from the 2019 baseline.

Note that CARB does not evaluate risks to on-site workers because risks to on-site workers are regulated by California Division of Occupational Safety and Health (CalOSHA).[51] CalOSHA establishes acceptable workplace exposure levels for on-site workers. CalOSHA Permissible Exposure Limits (PEL) are set to protect healthy workers from acute (8-hour) exposure that could result in respiratory irritation or illness. The assumption is that workers are healthy and that exposure to concentrations up to the PEL may be problematic but won't produce significant health effects. PELs are not designed to be protective of effects that result from long-term exposure and the PELs do not account for sensitive individuals.[52] As such, they are not appropriate in predicting residential and off-site worker risks that result from long-term exposure.

Figure V.3 Potential Off-Site Worker Cancer Risk and Risk Reduction for Chrome Plating Operations



[1] Results are based on the highest level of amp-hour throughput for individual chrome plating operations and controls, and the potential cancer risks are estimates at the closest receptor. For more details, please see Appendix F.

[51] *CalOSHA*

[52] *California Code of Regulations 5155*

2. Noncancer Health Impacts

CARB staff evaluated the potential noncancer health impacts associated with exposure to hexavalent chromium and trivalent chromium emissions from chrome plating facilities. It is anticipated that, where possible, decorative chrome plating and functional chrome plating facilities are likely to transition to trivalent chromium operations in response to the phase out of hexavalent chromium pursuant to the Proposed Amendments.

Based on the available emission inventory data to date, most of the hexavalent chromium emissions (91 percent) are liquid fuel combustion related, with only nine percent of total emissions statewide coming from non-combustion processes such as surface coatings and particulate categories. Staff expect that hexavalent chromium emissions from liquid fuel combustion to decrease as many mobile sources continue to transition to cleanest combustion and zero-emission technologies.

Staff conducted a multipathway analysis of acute and chronic health impacts from hexavalent and trivalent chromium. Consistent with the OEHHA Guidelines, staff evaluated the chronic noncancer inhalation and chronic noncancer oral routes for hexavalent chromium, and the acute, 8-hour, and chronic noncancer inhalation routes for trivalent chromium.

A reference exposure level (REL) is a reference concentration level used as an indicator of potential noncancer adverse health effects. RELs are designed to protect the most sensitive persons in the population by including safety factors. The chronic and acute health impacts presented in Table V.1 are expressed in terms of a hazard index (HI), which is a unitless ratio of modeled concentration to the REL for hexavalent chromium. A HI greater than 1.0 may indicate potential health impacts and may require further investigation; however, no adverse health impacts are anticipated to occur with an HI value equal to, or less than, one (OEHHA 2015).

Tables V.1 and V.2 summarize the noncancer health impacts from exposures to hexavalent and trivalent chromium. The results show that there are no anticipated noncancer health impacts from exposure to hexavalent or trivalent chromium from chrome plating facilities.

Table V.1 Summary of Hexavalent Chromium Noncancer Hazard Indices for Different Types of Plating Facilities (2019)

Pathway	Decorative Platers (Fume Suppressants)	Decorative Platers (Add-on Controls)	Small Functional Platers	Large Functional Platers
Chronic Inhalation	< 1	< 1	< 1	< 1
Chronic Oral	< 1	< 1	< 1	< 1

Table V.2 Summary of Trivalent Chromium Noncancer Hazard Indices for Different Types of Plating Facilities (2019)

Pathway	Decorative Platers (Fume Suppressants)	Decorative Platers (Add-on Controls)	Small Functional Platers	Large Functional Platers
Acute Inhalation	< 1	< 1	< 1	< 1
8-Hour Inhalation	< 1	< 1	< 1	< 1
Chronic Inhalation	< 1	< 1	< 1	< 1

B. Other Benefits

The Proposed Amendments would also benefit sensitive receptors such as schools, daycare facilities, and residential care facilities that are located near chrome plating facilities. Using Google Earth®, staff estimated that approximately nine percent of chrome plating facilities in California are located in close proximity (approximately within 300 meters) to schools.

By 2027, the Proposed Amendments will phase out the use of hexavalent chromium at decorative chrome plating facilities and require the addition of enhanced add-on controls, additional housekeeping, and best management practices for functional chrome plating facilities statewide. By 2039, the Proposed Amendments will phase out the use of hexavalent chromium at functional chrome plating facilities. The requirements of the Proposed Amendments are anticipated to lead to the reduction of hexavalent chromium emissions, which will result in health benefits for Californians, including disadvantaged and low income communities and communities of color located near chrome plating facilities.

The Proposed Amendments are also anticipated to stimulate research into advanced technology to support the use of alternative less toxic or non-toxic chemicals or metals with similar or better results.

VI. Emissions Inventories

A. Objective

This section summarizes the potential air quality impacts in California in response to the Proposed Amendments to the Chrome Plating ATCM. This section includes the following elements:

- An overview of the emission inventories.
- A description of the baseline used to estimate emission benefits of the Proposed Amendments, and
- Changes in emissions due to the Proposed Amendments as compared to the 2007 ATCM.

For an explanation of the specific health benefits resulting from the reductions in hexavalent chromium, see Section V.

B. Statewide and Facility Specific Emissions Inventories

Hexavalent chromium is emitted by a number of sources in California. To provide a high-level overview of these sources, CARB staff prepared a comparison of hexavalent emissions from chrome plating facilities to other sources statewide. This statewide emission inventory uses data from the California Emission Inventory Development and Reporting System (CEIDARS).[53]

To model the emissions of hexavalent chromium from chrome plating facilities, and their associated health effects, staff had to calculate emissions factors for those facilities. To calculate the emissions factors specifically from chrome plating facilities, CARB staff used chrome plating facility operation and activity data obtained from the Districts; throughput, source tested emission rates for the chrome plating facilities; and the ATCM emission limits from the 2007 ATCM.

1. Statewide Emissions Inventory

CARB tracks emissions of various toxic air pollutants that pose a threat to human health. These emission estimates are developed using a variety of quantification methods for stationary sources (point, aggregated point, and areawide), mobile sources (on-road and off-road), and natural sources.

The hexavalent chromium inventory summarized below represents estimates of emissions across all source categories in California for the year 2020. This inventory may not be comprehensive due to the nature of current toxics reporting programs. Currently, emissions are compiled through directly reported data for point sources and emission estimation methodologies for stationary aggregate, areawide, and mobile sources.

There may be other industrial sources that are not reporting to CARB. Reasons that these sources are not reporting are discussed in Section VI.(1)(b).

a) Stationary Point Sources

Emissions of TACs from individual stationary point sources are currently based on emissions reported by Districts on behalf of facility operators as part of the AB 2588 Air Toxics "Hot Spots" Program. The AB 2588 Program has components that address toxics emission reporting on a quadrennial (every four years) basis from facilities that meet certain program applicability provisions, as well as program components for evaluating the potential for public health impacts where emissions may be significant. However, the AB 2588 "Hot Spots" program also contains provisions for exempting facilities that the Districts determine to be "low-level" facilities from further reporting, based on the results of District prioritization scores and/or health risk assessment results. Therefore, the AB 2588 emission inventory does not represent an ongoing, comprehensive toxics emission inventory of all possible stationary sources. In general, the AB 2588 program applicability criteria require initial reporting by facilities that have emissions of 10 tons per year or more of criteria

[53] *CEIDARS*

pollutants (total organic gases, particulate matter, nitrogen oxides, or sulfur oxides), or smaller facilities in specific sectors (listed in Appendix E of the Emission Inventory Criteria and Guidelines, or EICG, for AB 2588)[54] that have the potential to emit highly toxic substances. Several of these Appendix E sectors establish initial applicability for operations that may emit hexavalent chromium, such as plating, polishing, coating, engraving, thermal spraying, and allied services. After evaluation, however, some facilities may have qualified for "low-level" exemptions from further reporting under the AB 2588 provisions.

Recently, amendments were adopted to the AB 2588 EICG regulation, which add or expand Appendix E sectors (e.g., anodizing and grinding involving cadmium or chromium), and which increase the number of chemical substances subject to AB 2588 reporting from about 450 to over 1,400 individual chemicals and three broad functional group classes, including PFAS compounds. In addition, the Criteria Pollutant and Toxics Reporting Regulation (CTR)[55] was recently amended, which will require ongoing, annual emission inventory reporting for facilities in essentially the same sectors as AB 2588 for small facilities. As CTR reporting is phased in, there will be more ongoing, annual coverage of the toxic emissions of these smaller facilities than had been possible under the provisions of AB 2588.

The emissions reported by facilities are maintained in the CEIDARS database for inventory reporting years up to and including 2020. Under the EICG reporting protocols, stationary point sources may report hexavalent chromium emissions under the pollutant identifier "Chromium, hexavalent (& compounds)" (CAS 18540-29-9). Alternately, facilities may report six individual hexavalent chromium containing compounds, which include: chromium trioxide, lead chromate, strontium chromate, barium chromate, sodium dichromate, and calcium chromate. For these six compounds, the hexavalent chromium portion is determined by using compound-specific molecular weight adjustment factors, per CARB/OEHHA guidance.[56]

As part of the inventory development process, an effort was made to identify sources of hexavalent chromium emissions specific to chrome plating operations. This was accomplished by searching for facilities reported to CEIDARS with specific industrial classification codes, process descriptions, or device types indicating likely plating operations. CARB staff looked specifically for chrome plating operations, particularly electrostatic plating, while excluding anodizing baths and spraying operations. Note that due to the applicability criteria for reporting requirements under EICG (namely emission thresholds and facility prioritization status), smaller facilities may be operating and emitting hexavalent chromium within a given District but not reporting to CARB's emission inventory.

b) Stationary Aggregate and Areawide Sources

Some additional emissions from stationary sources that are not directly reported as individual facilities are estimated as stationary aggregate or areawide sources, where data are available

[54] *AB 2588 Air Toxics Hot Spots Inventory Guideline*
[55] *AB 617 CTR*
[56] *CARB/OEHHA Guidance*

to complement the portion covered by individually reported facilities. Stationary aggregate categories represent emissions from point sources which are not inventoried individually but are estimated as an aggregated total, where broad data are available to do so.

Similarly, areawide categories represent sources of emissions that are dispersed over a wide geographic area, and thus are not generally addressed as individual point sources by programs such as AB 2588. Unlike point sources, emissions from stationary aggregate and areawide sources are estimated at a regional level using a 'top-down' methodology based on overall activity (e.g., fuel usage) for the specific sector.

In the case of hexavalent chromium, some 'top-down' regional data are available for some categories, but primarily in categories associated with liquid fuel combustion. In the case of hexavalent chromium, the primary emissions estimated from stationary aggregate and areawide sources include distillate oil combustion in the manufacturing and industrial sectors and residential fuel combustion for space heating.

CARB's approach to estimating hexavalent chromium from these source types consists of two steps. First, the total chromium emissions are estimated by applying category-specific chemical speciation profiles to total particulate matter (PM) emissions estimates. From there, the hexavalent chromium portion is estimated as five percent of the total chromium emissions (estimated from PM speciation) for liquid fuel combustion processes, based on a factor established through a review of scientific literature.[57,58,59,60]

As a final step, the stationary aggregate and areawide inventory is reconciled with any individually reported point sources of hexavalent chromium emissions in overlapping inventory categories to avoid any double counting of emissions.

c) On-Road and Off-Road Mobile Sources

Hexavalent chromium emissions from mobile sources are estimated as five percent of total chromium emissions that result from speciation of PM for liquid fuel combustion processes, as described above for stationary aggregate and areawide sources. The PM inventory that serves as the basis for on-road mobile source estimates originated from CARB's Emission Factor model EMFAC2017-MPOv010 for calendar year 2020.[61] This inventory represents emissions for all on-road vehicles ranging from light-duty passenger cars through heavy-duty trucks and buses.

Similarly, CARB maintains a series of models for the remaining mobile source categories such as aircraft, recreational vehicles, off-road equipment, ships, harbor craft, and trains. These emissions are compiled into CARB's California Emissions Projection and Analysis Model

---

[57] *CARB Modeling (Specification Profile Used)*
[58] *Nocon, 2018, Research on Chromium and Arsenic Speciation in Atmospheric Particulate Matter*
[59] *Kang et al., 2016. Distribution of Airborne Hexavalent Chromium Concentrations in Large Industrial Complexes in Korea*
[60] *Linak et al., 1997 Minimizing Emission of Hexavalent Chromium from Combustion Sources*
[61] *CARB EMFAC website*

(CEPAM). The PM inventory, which served as the basis for the other off-road mobile sources of hexavalent chromium emission inventory (using the speciation and five percent conversion factor method described above), is CEPAM version 2019-1.03 for calendar year 2020.[62]

d) Hexavalent Chromium Emissions Estimates

Overall, about 54 percent of the total hexavalent chromium emissions in California for year 2020 are estimated to be emitted by stationary sources (point sources, stationary aggregate, and areawide), most of which is directly reported for individual point sources (see Figure V.1). Based on the available emission inventory data to date, most of the hexavalent chromium emissions from mobile sources (91 percent) are liquid fuel combustion related, with only nine percent of total emissions statewide coming from non-combustion processes such as surface coatings and particulate categories. Staff expect that hexavalent chromium emissions from liquid fuel combustion to decrease as many mobile sources continue to transition to cleaner combustion and zero-emission technologies.

Staff estimate from the available emission inventory data that the contribution from chrome plating operations represents approximately 0.4 percent of the total hexavalent chromium emissions (not including fugitive emissions) and four percent of the hexavalent chromium emissions from non-combustion point source processes.

The non-combustion point source industries and processes include Search and Navigation Equipment (mostly surface coatings), Hydraulic Cement (cement manufacturing process and storage of sand and gravel), National Security (welding, coating, spray painting), Electric Services (boiler combusting), biomass (wood/bark), wood stockpiles, waste gas flares, Miscellaneous Nonmetallic Minerals (diatomaceous earth processing), and Paving Mixtures and Blocks (processing of asphalt, concrete). Allied operations, such as other forms of plating, anodizing, thermal spraying, etcetera, contribute additionally.

As previously discussed, it is important to note that the available data does not represent a comprehensive toxics emission inventory for all point sources. Relative to the areawide and mobile source categories, which account for emissions dispersed over a wide geographic region, chrome plating-related point sources may not appear as significant; however, these types of facilities can produce concentrated localized emissions resulting in elevated exposures and potential cancer risks which are often located within disadvantaged communities and other populated areas. Figure VI.1 below shows the 2020 statewide hexavalent chromium emissions (lbs/year) for mobile sources and stationary sources and Figure VI.2 shows the statewide hexavalent chromium emissions (lbs/year) for stationary sources only. Please note that some emissions in the estimates come from devices like boilers and diesel generators which are not necessarily specific to each industry.

[62] *CEPAM*

Figure VI.1 2020 Statewide Hexavalent Chromium Emissions for Mobile and Stationary Sources

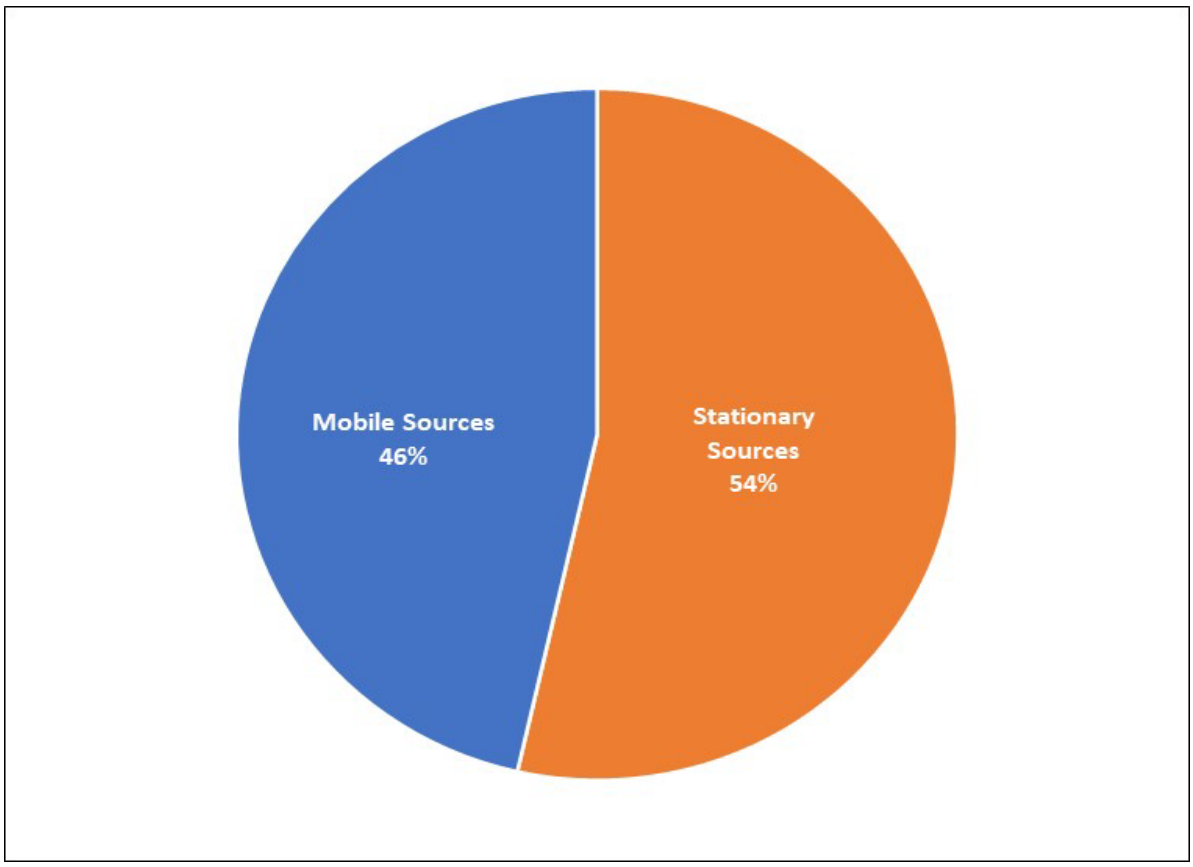
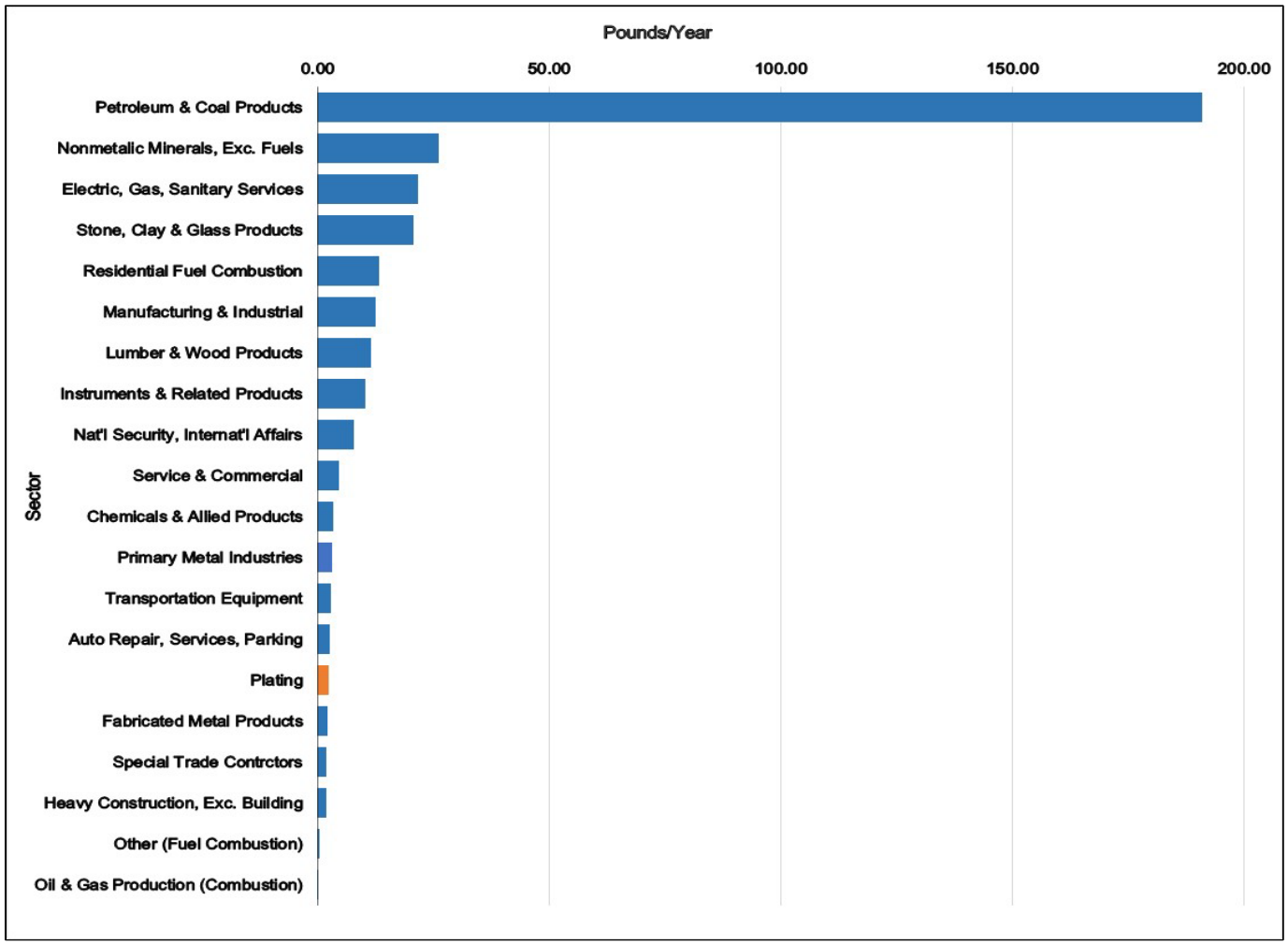


Figure VI.2 2020 Statewide Stationary Sources of Hexavalent Chromium Emissions



There are 113 chrome plating facilities statewide based on collected permit information data, and only 58 chrome plating facilities were identified from the data reported to CEIDARS for 2020. Those 58 facilities emit a combined total of 2.5 pounds of hexavalent chromium statewide. However, other facilities that are small enough to fall below the reporting requirements threshold may have contributed additional hexavalent chromium emissions into the air.

U.S. EPA has similarly identified small facilities as significant emitters of chromium compounds into the atmosphere.[63]

2. Facility Emissions Inventory

Hexavalent chromium from chrome plating facilities can be emitted in one of two ways. First, it can be collected and routed to an air pollution control device that is vented to the

[63] *EPA Chromium Electroplating National Emission Standards*

atmosphere through a stack, which is referred to as "stack emissions." Second, it can exit the building through open roof vents or open doors or windows, which is referred to as "fugitive emissions."

a) Baseline vs. Proposed Amendments

CARB staff projected hexavalent chromium emissions emitted from existing chrome plating facilities under two scenarios from 2022 to 2040. These scenarios consist of (1) the Baseline emissions levels, which were calculated assuming that facilities are compliant with the 2007 ATCM and that they are operating at their permitted amp-hour limits, and (2) the Proposed Amendments emissions levels, which were calculated assuming that facilities will be in compliance with the emissions limits and permitted amp-hour limits in the Proposed Amendments.

These two scenarios assumed:

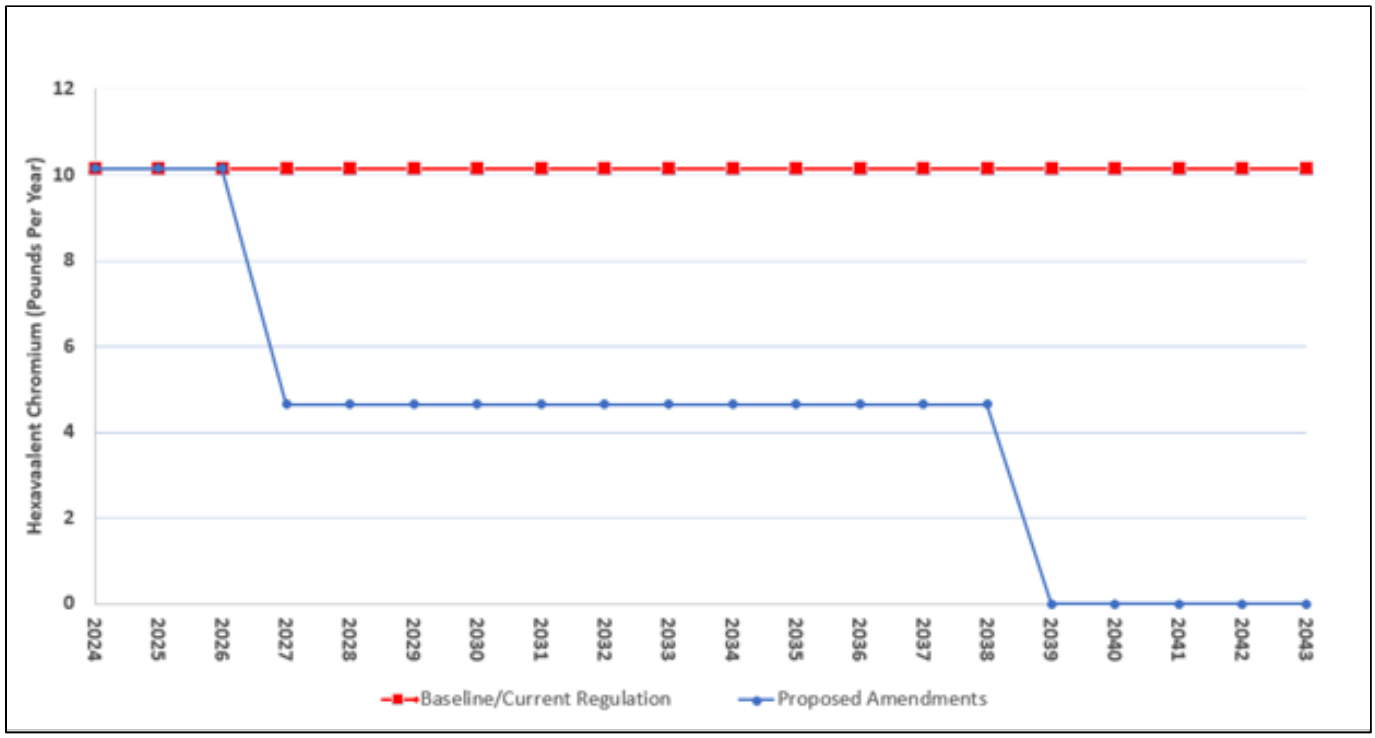
1. Starting on January 1, 2024, no new hexavalent chromium plating facilities will operate in California.
2. Existing decorative and hard functional chrome platers cease operation of hexavalent chromium tanks by January 1, 2027, and January 1, 2039, respectively.

Figure VI.3 presents projected hexavalent chromium emissions from 2024 to 2043 for scenario 2. Relative to the 2007 ATCM, the Proposed Amendments are projected to reduce a cumulative total of 121 pounds of hexavalent chromium from 2024 to 2043, not including fugitive emissions.

As shown in Figure VI.3, hexavalent chromium emissions reductions are expected to be achieved after January 1, 2027, when decorative chrome plating facilities are expected to transition from hexavalent chromium to trivalent chromium plating operations or another alternative. Hexavalent chromium emissions presented in Figure VI.3 do not account for fugitive emissions. Full compliance with the Proposed Amendments will occur after January 1, 2039, when functional chrome plating facilities are required to transition from hexavalent chromium to alternative technology. Hexavalent chromium emissions projections after 2038 reflect the full projected emissions benefits of the Proposed Amendments.

Comparing the scenarios provides a quantitative demonstration of the changes of emissions associated with the 2007 ATCM (Baseline) and the Proposed Amendments. For a summary of the health effects resulting from the Proposed Amendments, see Section V.

Figure VI.3 2007 ATCM/Baseline vs. Proposed Amendments Hexavalent Chromium Emissions



b) Stack Emissions

Staff quantified the emissions of hexavalent chromium from chrome plating facilities based on data available for chrome plating operations at these facilities. Emissions were estimated using chrome plating facility operation and activity data obtained from the Districts, including permitted throughput/electricity usage, facility-reported throughput and source tested emission rates for the chrome plating facilities, and the ATCM emission limits from the Chrome Plating ATCM.

Wherever applicable, 2019 data was used to estimate the amount of electricity used, because it represents operation levels not impacted by the COVID-19 pandemic and is more representative of normal conditions. When 2019 facility operational data was not available, the permitted throughput limit was used to estimate emissions. Also, when source testing data was not available, ATCM limits were used to estimate emission rates. To estimate emissions, CARB obtained the annual throughput data for approximately 80 percent of facilities for the calendar year 2019. Using ATCM emissions limits may overestimate emissions at some facilities. The emission estimates for any given year can be calculated by multiplying the electricity usage in amp-hour, the number of hours chrome plating, and an appropriate emission factor (see equation below).

Emissions [mg] = electricity usage [amp-hour] x emission factor [mg/amp-hour]

The emission factor(s) used in the emission estimates are either calculated from source test data or from the 2007 ATCM.

Because of the incomplete nature of the statewide emission inventory, CARB staff have calculated a range of estimated hexavalent chromium emissions in California from the chrome plating industry using data provided by the Districts. The estimates were calculated using the following methods to establish a range of emissions:

- A facility's permitted throughput in amp-hour for the chrome plating process(es)
- A facility's throughput in amp-hours (based on 2019 facility-reported usage data)
- The 2007 ATCM emission rate
- Source test data

The range of potential emissions was calculated as follows:

- Using the maximum permitted throughput from all permitted sources and the Chrome Plating ATCM limits, the estimated statewide emissions of hexavalent chromium from chrome plating facilities are 10.14 pounds of per year.
- Using the 2007 ATCM emission rate and reported amp-hour data, the estimated statewide emissions of hexavalent chromium from chrome plating facilities are 3.81 pounds per year.
- Using available source test data and actual reported amp-hour data in 2019, the estimated statewide emissions of hexavalent chromium from chrome plating facilities are 2.2 pounds per year.

Table VI.1 summarizes the estimated emissions from the plating tanks in chrome plating facilities. The estimated emissions may seem small when compared to criteria pollutant emissions or diesel PM emissions, which are sometimes measured in tons. However, because of the highly toxic nature of hexavalent chromium, an individual exposed to a very low air concentration of hexavalent chromium can experience severe adverse health impacts, including cancer.

The more important factor to consider is not total statewide emissions, but the proximity of emitting sources to receptors in the communities where they are located. Nearly 30 percent of chrome plating facilities have residential receptors located within 100 meters. Approximately 10 percent of chrome plating facilities have receptors located within 20 meters. Many chrome plating facilities (as discussed in Section II.(D)) are located in disadvantaged communities and other populated areas near sensitive receptors, such as schools.

Table VI.1 Summary of Estimated Hexavalent Chromium (Cr_6) from Chrome Plating Facilities Before Phase Out Date

Facility Type	Number of Facilities	Estimated Emissions of hexavalent chromium – Permitted Limits[1] (lbs/year)	Estimated Emissions of hexavalent chromium – ATCM Limits[2] (lbs/year)	Estimated Emissions of hexavalent chromium[3] – 2019 Data (lbs/year)
Decorative Chrome Plating	51	1.31	1.3	1.1[4]
Functional Chrome Plating	-	-	-	-
A) Hard Chrome Plating	36	8.64	2.5	1.1
B) Chromic Acid Anodizing	26	0.19	0.01	0.0[5]
All	**113**	**10.14**	**3.81**	**2.2**

[1] Reflects local air district permitted throughput and ATCM emission limit.
[2] Reflects a facility's 2019 throughput and ATCM emission limit.
[3] Reflects 2019 throughput and source tested emissions.
[4] Based on ATCM limits for facilities operating with fume suppressant only.
[5] Less than 3.6e-06, based on one available datapoint.

The estimated emissions shown in Table VI.2 represent only the emissions that are directly released from the chrome plating tanks, either through the add-on control system or off the surface of a tank that is controlled with a chemical fume suppressant. This emission estimate is based on the total number of facilities in operation, assuming that these facilities will remain in California. Some chrome plating facilities may elect to move out of state due to potential competitive disadvantages, which would increase hexavalent chromium emissions in other states. However, it is impossible to predict to what extent owners or operators may choose to move facilities out of the state as a result of the Proposed Amendments or to predict where they would relocate to. Therefore, the potential increase in hexavalent chromium emissions in other states have not been quantified. The estimate also does not include fugitive emissions.

3. Fugitive Emissions

Fugitive emissions are difficult to characterize and quantify since there can be many sources from which they are generated. Some of these sources can be from uncontrolled tank emissions, spraying of plated parts, hexavalent chromium dust on floors, or other operations that may cause hexavalent chromium emissions to be released into the air. For example, ambient monitoring and sampling at metal finishing facilities in Newport Beach, Paramount, and Long Beach showed elevated levels of hexavalent chromium that were attributed to cross drafts that allowed emissions from hexavalent chromium emitting tanks to exit the building enclosure.

Although data is still being developed to determine the exact nature and extent of fugitive hexavalent chromium emissions from chrome plating facilities, some fugitive emissions are occurring, and it is necessary that these emissions are considered and addressed by the Proposed Amendments in order to protect public health in communities in which chrome plating facilities are located.

Air dispersion modeling conducted by CARB staff, as well as air monitoring conducted by CARB's Monitoring and Laboratory Division and by South Coast AQMD, both underscore the importance of controlling fugitive emissions of hexavalent chromium from chrome plating facilities. The Proposed Amendments require preventative measures to reduce fugitive emissions. These preventative measures require building enclosures for chrome plating operations, add-on controls for previously uncontrolled hexavalent chromium containing tanks, enhanced housekeeping, and best management practices.

a) CARB Air Dispersion Modeling

To attempt to assess the possible reductions in fugitive emissions from the sources listed above, CARB staff conducted air dispersion modeling of fugitive emissions from chrome plating facilities of all types. The model was not intended to quantify actual emission rates, but rather to allow staff to assess the relative reductions. The model assumes that some of the emissions that leave the tanks are not captured by vent hoods. Those emissions that are not captured remain in the building, and some portion of those emissions escape from the building through roof vents or through doors and windows (see Appendix F).

CARB staff can not directly estimate risk from fugitive emissions based on the currently available data. There have been no definitive source tests and comparative ambient air studies that provide data on the rate of fugitive emissions coming from chrome plating facilities. However, ambient monitoring data gathered by the South Coast Air Quality Management District near the Anaplex facility in Paramount shows as much as a 91 percent drop in concentrations of hexavalent chromium at the monitoring sites that were located just outside of the facility after the South Coast Rule 1469 requirements were put in place.[64] This suggests that fugitive emissions can play a role in near-source chromium concentrations and that they can be reduced by adding requirements such as the building enclosure requirements included in Rule 1469.

CARB staff have conducted a high-level directional analysis that estimates the potential cancer risks associated with fugitive emissions by assuming that chromium emissions that are not captured by emissions control equipment associated with plating tanks could be released to the atmosphere as fugitive.

Risk values were estimated for annual plating electrical consumption rates ranging from 5,000 to 120,000,000 amp-hrs and for receptor distances ranging from 10 meters from the source to 500 meters from the source.

Based on the assumptions and model setup described in Appendix F, staff estimated potential cancer risks ranging from one chance per million to greater than 1,000 chances per million.

[64] *Anaplex Monitoring Data*

b) South Coast AQMD Sampling and Air Monitoring

South Coast AQMD conducted sampling in 2016 to identify the specific causes of elevated ambient hexavalent chromium levels near several facilities. Three sources (tanks) of potential hexavalent chromium emissions were selected as possibly having the greatest potential for causing elevated ambient hexavalent chromium near the facilities. Samples were taken from the air above the tanks to represent emissions that are released and transported by air currents towards ambient monitors. These elevated source concentrations were considered as positive identification that the facility was contributing to the nearby elevated ambient concentrations. Additionally, South Coast AQMD staff determined it was likely that several tanks in all three facilities that were tested were contributing to the nearby elevated ambient concentrations.

From 2016 through 2020, South Coast AQMD conducted monitoring of hexavalent chromium in the ambient air in the city of Paramount. In particular, the monitoring data around one of the chrome plating facilities showed decreased concentrations of hexavalent chromium between 76 percent and 91 percent once Rule 1469 was approved and implemented by South Coast AQMD. This demonstrated that the steps South Coast AQMD took to control fugitive emissions through their rule reduced ambient concentrations. However, South Coast AQMD did not quantify emissions reductions from these measures because, at this time, there is no method to quantify fugitive emissions.

We expect similar reductions of fugitive emissions to occur following implementation of the Proposed Amendments, including further reductions in the South Coast Air Basin. Table VI.2 summarizes each emission control requirement in the Proposed Amendments that would reduce fugitive emissions.

Table VI.2 Summary of Additional Requirements Addressing Fugitive Emissions

Requirement	Discussion of Additional Requirements in Proposed Amendments
Enhanced housekeeping and best management practices	Enhanced housekeeping and best management practices will reduce generation of hexavalent chromium containing dust and cleanup these dusts properly if they are present, which reduces fugitive emissions of the dust.
Building enclosure requirements	Building enclosures reduce fugitive emissions escaping through building openings and will increase the capture of emissions through add-on controls.
Add-on controls for Tier III tanks that are not chrome plating tanks	This requirement will reduce fugitive emissions from Tier III tanks that are not chrome plating tanks.

VII. Environmental Analysis

As the lead agency for the Proposed Amendments, CARB prepared a Draft Environmental Analysis (Draft EA) under its certified regulatory program (Cal. Code Regs., tit. 17, §§ 60000 through 60005) to comply with the requirements of the California Environmental Quality Act (CEQA). CARB's regulatory program, which involves the adoption, approval, amendment, or repeal of standards, rules, regulations, or plans for the protection and enhancement of the State's ambient air quality has been certified by California Secretary for Natural Resources under Public Resources Code section 21080.5 of CEQA (Cal. Code Regs., tit. 17, § 15251,

subd. (d)). As a lead agency, CARB prepares a substitute environmental document (referred to as an "Environmental Analysis" or "EA") as part of the Staff Report to comply with CEQA (Cal. Code Regs., tit. 17, § 60004.2).

The original Chrome Plating ATCM was adopted in 1988 to reduce hexavalent chromium emissions from decorative and hard chrome plating facilities, as well as chromic acid anodizing operations. That measure reduced overall emissions from these facilities by 97 percent by introducing technology-based emission standards. The emission standards were met by utilizing add-on pollution control devices such as high efficiency particulate air (HEPA) filters, packed bed scrubbers, and/or by adding chemical fume suppressants to the chrome plating tanks. In the Technical Support Document to the Proposed ATCM for Emissions of Hexavalent Chromium from Chrome Plating and Acid Anodizing Operations released in January 1988, CARB analyzed the measure for possible significant adverse environmental Impacts and determined that none would result from implementation of the measure.[65]

In 1998, the Chrome Plating ATCM was amended to establish equivalency with federal standards. These amendments did not change the limits already in place but established separate limits for new sources. These amendments to the ATCM placed hard chrome plating operations for existing sources into three tiers (Large/Medium/Small) but established two tiers (Large and Medium/Small) for new sources. For hard chrome plating, the ATCM required operations to comply with an emission limitation expressed in terms of milligrams of hexavalent chromium emissions per amp-hour (mg/amp-hr). The applicable emission limitation depended on the chrome plating source size (both in terms of mass emissions and amp-hour usage). The largest hard chrome plating operations had to meet a control efficiency greater than 99 percent by installing HEPA filter add-on air pollution control devices. Decorative chrome plating and chromic acid anodizing facilities were required to use chemical or mechanical fume suppressants to reduce hexavalent chromium emissions by 95 percent from the chrome plating tanks. In addition to emission requirements, chrome plating and chromic acid anodizing operations were required to conduct a performance test on the chrome plating tanks to demonstrate compliance. The ATCM also required regular inspections and maintenance, parameter monitoring, operation and maintenance plans, and recordkeeping. The CARB Staff Report stated that the 1998 amendments to the Chrome Plating ATCM would not have any significant adverse impacts on the environment and achieved the same reductions as the Chrome Plating ATCM adopted in 1988.[66]

In an effort to further protect the public, additional amendments to the Chrome Plating ATCM were adopted in 2007. Generally, except for small facilities, the limits required the installation or the upgrade of add-on air pollution control devices on the chrome plating tank. The requirements became effective between April 2008 and October 2011, depending on the facility's proximity to sensitive receptors and its total throughput. The compliance

---

[65] *Technical Support Document to Propose ATCM for Emissions of Hexavalent Chromium from Chrome Plating and Acid Anodizing Operations. January 1988. Page 58.*

[66] CARB. Proposed Amendments to the Hexavalent Chromium Control Measure for Decorative and hard Chrome Plating and Chromic Acid Anodizing Facilities. April 1998. Page 6.

date to meet emission control requirements was October 2009 for facilities with sensitive receptors within 330 feet and/or those with higher throughputs. The CARB Staff Report concluded that no significant adverse environmental impacts should occur from adoption of and compliance with the proposed amendments to the ATCM.[67]

CARB has prepared the Draft EA (see Appendix D) to assess the potential for significant adverse and beneficial environmental impacts associated with the Proposed Amendments, as required by CARB's certified regulatory program (Cal. Code Regs., tit. 17, § 60004.2). The resource areas from the CEQA Guidelines Environmental Checklist were used as a framework for assessing the potential for significant impacts. The CEQA Guidelines Environmental Checklist identifies physical, biological, social, and economic factors that might be affected by the Proposed Amendments.[68]

It is expected that many of the potentially significant impacts can be feasibly avoided or mitigated to a less-than-significant level, due to project-specific environmental review processes associated with compliance responses and compliance with local and state laws and regulations. However, the Draft EA takes the conservative approach in its post-mitigation significance conclusions (i.e., tending to overstate the risk that feasible mitigation may not be sufficient to mitigate an impact to be less than significant or may not be implemented by other parties) and discloses, for CEQA compliance purposes, that potentially significant environmental impacts may be unavoidable.

Table VII.1 Summary of Potential Environmental Impacts

Section	Resource Area Impact	Significance
1-1	Short-Term Construction-Related Impacts on Aesthetics	Less than Significant
1-2	Long-Term Operational-Related Impacts on Aesthetics	Less than Significant
2-1	Short-Term Construction and Long-Term Operational Impacts on Agricultural and Forest Resources	Less than Significant
3-1	Short-Term Construction-Related Health Impacts on Air Quality	Potentially Significant and Unavoidable
3-2	Long-Term Operational-Related Impacts on Air Quality	Less than Significant
4-1	Short-Term Construction-Related Impacts on Biological Resources	Less than Significant
4-2	Long-Term Operational-Related Impacts on Biological Resources	Less than Significant
5-1	Short-Term Construction-Related Impacts on Cultural Resources	Potentially Significant and Unavoidable
5-2	Long-Term Operational-Related Impacts on Cultural Resources	Less than Significant

[67] *CARB. Proposed Amendments to the Hexavalent Chromium Airborne Toxics Control measure for Chrome Plating and Chromic Acid Anodizing Operations. August 11, 2006. Page 122.*

[68] *CEQA Statute and Guidelines*

Section	Resource Area Impact	Significance
6-1	Short-Term Construction-Related Impacts on Energy Demand	Less than Significant
6-1	Long-Term Operational-Related Impacts on Energy Demand	Less than Significant
7-1	Short-Term Construction-Related and Long-Term Operational-Related Impacts on Geology and Soils	No Impact
8-1	Short-Term Construction-Related Impacts on Greenhouse Gases	Less than Significant
8-2	Long-Term Operational Related Impacts on Greenhouse Gases	Less than Significant
9-1	Short-Term Construction-Related Impacts to Hazards and Hazardous Materials	Potentially Significant and Unavoidable
9-2	Long-Term Operation-Related Impacts to Hazards and Hazardous Materials	Potentially Significant and Unavoidable
10-1	Short-Term Construction-Related Impacts to Hydrology and Water Quality	Less than Significant
10-2	Long-Term Operational-Related Impacts on Hydrology and Water Quality	Less than Significant
11-1	Short-Term Construction-Related and Long-Term Operational-Related Impacts to Land Use and Planning	Less than Significant
12-1	Short-Term Construction-Related and Long-Term Operational-Related Impacts to Mineral Resources	Less than Significant
13-1	Short-Term Construction-Related Impacts to Noise and Vibration	Potentially Significant and Unavoidable
13-2	Long-Term Construction-Related Impacts to Noise and Vibration	Less than Significant
14-1	Short-Term Construction Related and Long-Term Operational-Related Impacts to Population, Employment and Housing	Less than Significant
15-1	Short-Term Construction-Related and Long-Term Operational-Related Impacts to Public Services	Less than Significant
16-1	Short-Term Construction-Related and Long-Term Operational-Related Impacts to Recreation	Less than Significant
17-1	Short-Term Construction-Related Impacts to Transportation and Traffic	Less than Significant
17-2	Long-Term Operational-Related Impacts to Transportation and Traffic	Less than Significant
18-1	Short-Term Construction-Related and Long-Term Operational Impacts on Tribal Cultural Resources	Less than Significant
19-1	Short-Term Construction-Related and Long-Term Operational Impacts on Utilities and Service Systems	Less than Significant
20-1	Short-Term Construction Related and Long-Term Operational-Related Effects on Wildfire	Less than Significant

Written comments on the Draft EA will be accepted from December 2, 2022, through January 17, 2023. The Board will consider the Final EA, including responses to comments received on the Draft EA, before taking action to adopt the Proposed Amendments. The full Draft EA can be found in Appendix D. If the Proposed Amendments are adopted, a Notice of

Decision will be posted on CARB's website and filed with the Secretary of the Natural Resources Agency for public inspection (Cal. Code Regs., tit. 17, § 60004.2, subd. (d)).

VIII. Environmental Justice

A. Background

State law defines environmental justice as the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (Gov. Code, § 65040.12, subd. (e)(1)). Environmental justice includes, but is not limited to, all of the following: (A) the availability of a healthy environment for all people; (B) the deterrence, reduction, and elimination of pollution burdens for populations and communities experiencing the adverse effects of that pollution, so that the effects of the pollution are not disproportionately borne by those populations and communities; (C) governmental entities engaging and providing technical assistance to populations and communities most impacted by pollution to promote their meaningful participation in all phases of the environmental and land use decision making process; (D) at a minimum, the meaningful consideration of recommendations from populations and communities most impacted by pollution into environmental and land use decisions (Gov. Code, § 65040.12, subd. (e)(2)).

The Board approved its Environmental Justice Policies and Actions (Policies) on December 13, 2001, to establish a framework for incorporating environmental justice into CARB's programs consistent with the directives of State law. These policies apply to all communities in California but are intended to address the disproportionate environmental exposure burden borne by low income communities and communities of color. Environmental justice is one of CARB's core values and is fundamental to achieving its mission.

The Board approved its Environmental Justice Policies and Actions[69] in December 2001 to establish a framework for incorporating environmental justice into CARB's programs consistent with the directives of State laws. These policies apply to all communities in California and are intended to address the environmental exposure burden borne disproportionately by disadvantaged communities.

In July 2017, AB 617 was signed into law to further environmental justice efforts in California. Pursuant to AB 617, CARB is implementing community-focused air quality programs to address community-scale air pollution through new community-focused and community-driven actions to reduce exposure and improve public health in communities that experience disproportionate cumulative burdens from exposure to air toxic pollutants. These actions include addressing hexavalent chromium emissions from chrome plating operations.

[69] *CARB Policies and Actions for Environmental Justice*

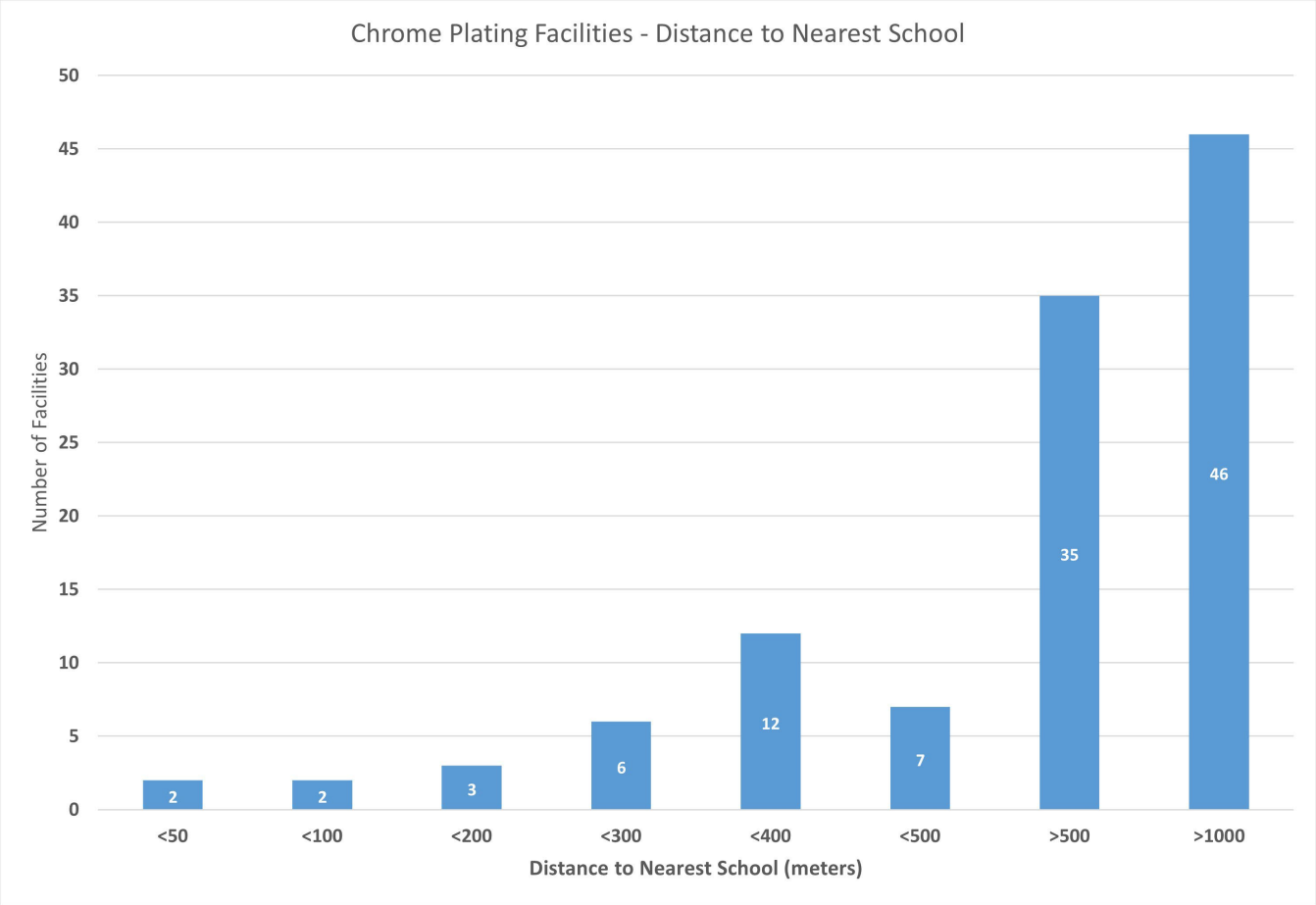
B. Impacted Communities

Hexavalent chromium is one of the most potent carcinogens identified as a TAC and continues to be emitted from chrome plating facilities, resulting in elevated health risk in surrounding communities. There is no known safe level of exposure to hexavalent chromium. For TACs with no identified safe level of exposure, Health and Safety Code section 39666(c) requires that the ATCM reduce emissions to the lowest level achievable through the application of BACT or a more effective control method, unless CARB determines, based on an assessment of risk, that an alternative level of emission reduction is adequate or necessary to prevent an endangerment of public health. The ATCM must be designed in consideration of the factors listed in Health and Safety Code section 39665(b), including the characteristics of the pollutant and emissions, health risks, environmental impacts, and costs.

The Proposed Amendments are consistent with CARB's environmental justice goals because they would reduce exposure to air pollutants and reduce adverse health impacts associated with this toxic air contaminant (hexavalent chromium). These Amendments are designed to reduce to the lowest achievable emissions of hexavalent chromium. The 2007 ATCM has substantially reduced the emissions of hexavalent chromium from these facilities; however, it is necessary to do more to further protect communities and reduce emissions from both direct and fugitive sources by employing additional controls or alternative technologies. Due to the availability of less toxic alternative for some hexavalent chromium plating processes, emissions of hexavalent chromium can be further reduced in communities where these facilities operate.

Chrome plating facilities are often located near sensitive receptors such as schools, day care centers, homes, and nursing homes. Using the Google Earth® tool, staff estimated that nine percent of chrome plating facilities in California are located in close proximity (under about 300 meters) to schools. Figure VIII.1 below shows the number of chrome plating facilities and the distance (in meters) to nearest school.

Figure VIII.1 Chrome Plating Facilities and Distance to Nearest School



[1] The distance on the x-axis is not inclusive of the previous distance bin. For example, <100 refers to schools that are greater than 50 meters and less than 100 meters.

C. Community Engagement

During the development of the Proposed Amendments, CARB staff engaged the community and its leaders to ensure that the Proposed Amendments are aligned with community needs. Staff conducted seven technical workgroup meetings, two public workshops, and monthly meetings with environmental justice groups such as California Communities Against Toxics, Teacher's Association of Paramount, California Safe Schools, Del Amo Action Committee, Coalition for Clean Air, Community Environmental Services (CES), Physicians for Social Responsibility-Los Angeles, East Yard Communities for Environmental Justice (EYCEJ), and other community groups.

In addition to the workshops and monthly meetings, staff also worked with environmental advocates to arrange a tour of some of the communities in Southern California that are impacted by hexavalent chromium emissions from chrome plating operations as well as emissions from a variety of metal forging and metal finishing operations. The tour was attended by CARB staff, members of CARB's Board, and representatives of other state and

local agencies. The tour began in Long Beach and ended in East Los Angeles and provided the attendees with the opportunity to see, firsthand, the proximity of many of these sources to nearby residents and sensitive receptors, and the cumulative nature of air pollution sources in these communities.

These meetings gave environmental justice groups the opportunity to express their concerns about toxic cumulative exposure from the chrome plating operations located in their neighborhoods. These discussions and the tour helped CARB staff to understand the community groups' concerns and the need for actions in the near term to reduce the toxic exposures to hexavalent chromium.

IX. Standardized Regulatory Impact Analysis

Government Code sections 11346.2, subdivision (b)(2) and 11346.3, subdivision (c) require the preparation of a Standardized Regulatory Impact Assessment (SRIA) for a major regulation (as defined by Department of Finance regulations). CARB staff are proposing to amend the 2007 ATCM to further reduce emissions from chrome plating operations.

The Proposed Amendments are a major regulation requiring a SRIA because the economic impact of the regulation is projected to exceed $50 million in a 12-month period (Cal. Code Regs., tit. 1, §§ 2000, subd. (g) & 2002, subd. (a)). CARB expects the Proposed Amendments to become effective January 1, 2024, and be fully implemented by January 1, 2039. The SRIA analyzes the costs of the Proposed Amendments from 2024 to 2043. This section summarizes the economic impact of the Proposed Amendments as presented in the SRIA, which can be found in Appendix C, as well as on the Department of Finance (DOF) website. CARB responses to comments received from DOF can also be found in Appendix C.

CARB staff use Regional Economic Models, Inc. (REMI) Policy Insight Plus Version 2.5.0 to estimate the macroeconomic impacts of the Proposed Amendments on the California economy. REMI is a structural economic forecasting and policy analysis model that integrates input-output, computable general equilibrium, econometric and economic geography methodologies.[70] REMI Policy Insight Plus provides year-by-year estimates of the total impacts of the Proposed Amendments, pursuant to the requirements of SB 617[71] and the California Department of Finance. Staff used the REMI single region, 160 sector model with the model reference case adjusted to reflect California Department of Finance's most current publicly available economic and demographic projections.[72]

Specifically, the REMI model's National and Regional Control was updated to conform to the most recent California Department of Finance economic forecasts, which include U.S. Real Gross Domestic Product, income, and employment, as well as California civilian employment by industry, released with the 2022-23 May Revision to the Governor's Budget revised on

[70] *REMI Models, PI+*

[71] *Senate Bill 617 (Calderon 2011)*

[72] California Department of Finance, Chapter 1: Standardized Regulatory Impact Analysis for Major Regulations - Order of Adoption. December 2013.

May 13, 2022, and Department of Finance demographic forecasts for California population forecasts, last updated in July 2021.[73,74,75,76] After the Department of Finance economic forecasts end in 2025, CARB staff made assumptions that post-2025, economic variables would continue to grow at the same rate projected in the REMI baseline forecasts.

The results from the REMI model provide estimates of the impact of the Proposed Amendments on the California economy. These results represent the annual incremental change from the implementation of the Proposed Amendments relative to the baseline scenario. The California economy is forecasted to grow through 2043. Therefore, negative statewide impacts reported here should be interpreted as a slowing of growth and positive statewide impacts as an acceleration of growth resulting from the Proposed Amendments.

A. Changes Since the Release of the SRIA

1. Phase Out Date Change

Since the release of the SRIA on June 1, 2022, the phase out date for usage of hexavalent chromium in decorative chrome plating facilities was changed from January 1, 2026, to January 1, 2027, to provide more time to implement alternatives to plating without hexavalent chromium. Therefore, costs and emissions estimates used in the cost analysis were updated to reflect this change.

2. Hazardous Waste Disposal Cost

Direct costs to the chrome plating industry have been updated to include hazardous waste disposal costs required as part of the installation of an alternative technology. For compliance to the Proposed Amendments, chrome plating facilities will need to remove and dispose of hexavalent chromium containing solutions and hardware that have been contaminated by hexavalent chromium such as the tanks, anodes, add-on controls and any associated transporting equipment such as pipes. This cost was not included in the SRIA and is included here.

To calculate waste disposal cost, a decorative chrome plating facility is estimated to have on average 3 tanks for disposal and about 800 gallons of hexavalent chromium containing solution to be disposed of at each facility.[77] Types and sizes of solid disposal from each facility may vary and may include tanks, anodes, add-on controls, and associated piping and

---

[73] California Department of Finance. Economic Research Unit. National Economic Forecast – Annual & Quarterly. Sacramento: California. April 2022.

[74] California Department of Finance. Economic Research Unit. California Economic Forecast – Annual & Quarterly. Sacramento: California. April 2022.

[75] California Department of Finance. Economic Research Unit. National Deflators: Calendar Year averages: from 1929, April 2021. Sacramento: California. May 2022.

[76] California Department of Finance. Demographic Research Unit. Report P-3: Population Projections, California, 2010-2060 (Baseline 2019 Population Projections; Vintage 2020 Release). Sacramento: California. July 2021.

[77] Conversion Cost Document April 2021

ducting. The range of cost estimates is based on a high-end volume estimate and quotes from three hazardous waste disposal companies operating in California. Table IX.1 contains a summary of the estimated range of hazardous waste disposal costs for decorative plating facilities. As shown in Table IX.1, the total waste disposal cost ranged from $11,460 to $27,500. For cost analysis, staff used high-end, one-time cost of $27,500 to estimate hazardous waste disposal cost to a decorative plating facility due to the hexavalent chromium phase out.

Table IX.1 Summary of Hazardous Waste Disposal Cost for Decorative Plating Facilities

Company[1]	Liquid Waste Disposal Cost ($)	Solid Waste Disposal Cost ($)	Total Waste Disposal Cost ($)
Company 1	10,000	9,400	19,400
Company 2	3,660	7,800	11,460
Company 3	15,000	12,500	27,500

[1] Staff obtained quotes in 2022, cost estimates are assumed to be in 2021$.

Functional plating facilities are estimated to have about double the amount of plating tanks based on CARB's 2018 facility survey information. Therefore, cost for hazardous waste disposal for functional plating facilities estimates a total of 5 tanks for disposal, which contains about 1,600 gallons of hazardous liquid waste. Table IX.2 summarizes the estimated range of hazardous waste disposal costs for functional plating facilities. As shown in Table IX.2, the total waste disposal cost ranged from $22,925 to $55,000. For cost analysis, staff used high-end, one-time cost of $55,000 to estimate hazardous waste disposal cost to a functional plating facility due to the hexavalent chromium phase out.

Table IX.2 Summary of Hazardous Waste Disposal Cost for Functional Plating Facilities

Company[1]	Liquid Waste Disposal Cost ($)	Solid Waste Disposal Cost ($)	Total Waste Disposal Cost ($)
Company 1	20,000	18,600	38,600
Company 2	7,325	15,600	22,925
Company 3	30,000	25,000	55,000

[1] Staff obtained quotes in 2022, cost estimates are assumed to be in 2021$.

3. Emissions and Cost Comparison Estimates

The estimated cost, emissions, and emission benefits due to the Proposed Amendments have been updated since the release of the SRIA. Emissions estimates were updated to reflect the hexavalent chromium phase out date of January 1, 2027, for decorative chrome plating facilities. Other updates include a correction of an emissions overestimate in years 2025 and 2038, the original year before the phase out dates for the applicable chrome plating facilities. The corrected emissions are shown in Table I.1, with a total estimated emission reduction of about 120 pounds over the 20-year analysis period.

Direct cost comparisons and the cost-effectiveness calculations of regulatory alternatives were updated to reflect the updated phase out date for decorative chrome plating facilities and corrected emissions. In addition, for comparison purposes and for the cost-effectiveness

calculations, direct cost values that included equipment amortization, ongoing cost, taxes, permit modification, and waste removal were used for calculations of cost effectiveness of the regulatory alternatives, as discussed in Section X. The updated cost values are shown in subsections that follows.

4. Update REMI National and Regional Control

Staff updated the REMI national and regional control to conform to the most recent California Department of Finance economic forecast, which was released with the 2022-23 May Revision to the Governor's Budget revised on May 13, 2022. The forecasts include U.S. Real Gross Domestic Product, income, and employment, as well as California civilian employment by industry. Staff assumed that post 2025, the economic variables would continue to grow at the same rate projected in the REMI baseline forecasts.

The changes in macroeconomic impact due to the REMI national and regional control updates are very small. Relative to the previous forecast, the economy is forecasted to rebound slightly slower from the global situation of 2020. Under the updated national and regional control, the Proposed Amendments are estimated to yield slight smaller negative impacts to the economy.

5. Refine the Macroeconomic Impact Analysis Methodology

Staff refined the macroeconomic impact analysis methodology for the sensitivity analysis included in the SRIA to include an analysis of scenarios where the demand for chrome plated products from California decreases by 25 percent, 50 percent, and 75 percent. In the SRIA, this was modeled using REMI's exogenous final demand policy variable.

Staff refined this methodology by modeling the potential impacts of this loss in demand as an additional 25 percent, 50 percent, and 75 percent employment decrease, using REMI's employment and adjusted industry sales policy variables instead of the exogenous final demand policy variable. This method decreases employment in direct proportion to the assumed loss in demand and uses adjusted industry sales to calibrate the labor productivity, resulting in a greater estimated employment decrease in the analytical period relative to the SRIA analysis.

6. Add Scenarios of Loss of Demand in Fiscal Analysis

Staff added the potential impacts to local and state government tax revenue for the scenarios that analyze an additional 25 percent, 50 percent, and 75 percent decrease in demand in the chrome plating industry. Loss of corporate income tax and personal income tax from chrome plating facilities are added into the analysis.

7. Correct Error in Sensitivity Analysis Table 5.14

Staff identified an error in Table 5.14 of the SRIA which shows the impact to the chrome plating industry with a 75 percent decrease in chrome plating demand in both the decorative and functional chrome plating. The updated table, Table IX.3, is shown below, which

represents the scenario with a 75 percent decrease in chrome plating using the same cost assumptions and REMI national and regional control in SRIA, for the purpose of consistency.

Table IX.3 Updated SRIA Table 5.14 Impact to the Chrome Plating Industry with a 75 Percent Decrease in Chrome Plating Demand

Year	Level of Employment	Percent Change in Employment	Change in Total Jobs	Level in Total Output (2021M$)	Percent Change in Total Output	Change in Total Output (2021M$)
2023	4,698	0.00	0	1,255	0.00	0
2024	4,768	0.00	0	1,285	0.00	0
2025	4,777	-7.51	-359	1,296	-7.05	-91
2026	4,737	-7.52	-356	1,289	-7.08	-91
2027	4,680	-7.54	-353	1,279	-7.13	-91
2028	4,637	-7.55	-350	1,274	-7.15	-91
2029	4,615	-7.54	-348	1,274	-7.15	-91
2030	4,567	-7.58	-346	1,265	-7.21	-91
2031	4,532	-7.61	-345	1,261	-7.24	-91
2032	4,502	-7.63	-343	1,256	-7.27	-91
2033	4,473	-7.65	-342	1,252	-7.29	-91
2034	4,446	-7.67	-341	1,249	-7.31	-91
2035	4,423	-7.68	-339	1,246	-7.33	-91
2036	4,402	-7.68	-338	1,245	-7.33	-91
2037	4,384	-7.67	-336	1,245	-7.33	-91
2038	3,549	-90.04	-3,195	1,012	-84.70	-857
2039	3,542	-89.89	-3,184	1,015	-84.89	-861
2040	3,541	-89.51	-3,170	1,019	-84.80	-864
2041	3,540	-89.11	-3,154	1,024	-84.63	-867
2042	3,542	-88.68	-3,141	1,029	-84.39	-868
2043	3,544	-88.24	-3,127	1,034	-84.11	-870

B. Direct Costs

The Proposed Amendments apply to chrome plating businesses that use hexavalent chromium, including decorative chrome plating and functional chrome plating (which includes hard chrome plating and chromic acid anodizing). These businesses belong in the "Electroplating, Plating, Polishing, Anodizing, and Coloring" industry (part of the North American Industry Classification System (NAICS) code 332813).

The Proposed Amendments require decorative and functional chrome plating businesses to phase out the use of hexavalent chromium over time. Decorative chrome plating businesses will phase out the use of hexavalent chromium by 2027. Functional chrome plating businesses will be required to implement enhanced best management practices while they are using hexavalent chromium and will phase out the use of hexavalent chromium by

2039, unless CARB amends the Proposed Amendments after considering the results of a technology review. The cost analysis assumes trivalent chromium technology will be replacing the existing hexavalent chromium technology and that each facility complies with the Proposed Amendments to continue operating in California. The approximate number of facilities by type are listed in Table IX.4 below.

Table IX.4 Approximate Number of Facilities by Type

Facility Type	Quantity
Decorative Chrome Plating	51
Functional Chrome Plating	-
A) Hard Chrome Plating	36
B) Chromic Acid Anodizing	26
Total	**113**

1. Cost Inputs

The total direct costs are the summation of compliance costs for applicable requirements in the Proposed Amendments, including permitting costs. Some of the compliance costs will occur only once (e.g., hazardous waste disposal cost before conversion, conversion cost, permit modification cost, and new permitting cost), while other compliance costs will be recurring (e.g., operating cost and permit renewal cost). Some recurring costs such as permit renewal costs, are assumed to be the same before and after the conversion. Total direct costs also include any savings from baseline operations. All costs in this analysis are in 2021 dollars.

For decorative chrome plating facilities that are being phased out of hexavalent chromium use by January 1, 2027, their direct costs are mainly those associated with their transition to the trivalent chromium plating process and their associated ongoing costs. A summary of all considered compliance costs for a decorative chrome plating facility is shown in Table IX.5.

Table IX.5 Summary of Compliance Costs for a Decorative Chrome Plating Facility

Cost Description	Cost (2021$)	Unit	Basis
Hazardous waste disposal cost before conversion[1]	27,500	Per facility	Based on various quotes given by hazardous waste disposal companies
Trivalent chromium conversion equipment cost	323,100	1 system	Based on various quotes given by trivalent chromium technology suppliers
Trivalent chromium plating operating cost	15.11	Per kamp-hr	Based on various quotes given by trivalent chromium technology suppliers
Hexavalent plating operating cost	12.93	Per kamp-hr	Based on various quotes given by trivalent chromium technology suppliers
Permitting cost	Up to 10,657	New permit for control system on previously uncontrolled chrome tank	Permit modification fee varies by local air district
Permit renewal	1,238 – 2,492	Per year	Varies by local air district

[1] Staff obtained quotes in 2022, cost estimates are assumed to be in 2021$.

For the functional plating facilities, their direct costs are associated with enhanced requirements while hexavalent chromium is in use which include source testing, building enclosures, best management practices, and add-on controls, and the cost of converting to trivalent chromium usage. The total direct cost or incremental compliance cost is calculated by summing all costs for converting to and operating the trivalent chromium plating process and subtracting the operating cost for the hexavalent chromium plating process (baseline). A summary of all considered compliance costs for a functional chrome plating facility is shown in Table IX.6.

Table IX.6 Summary of Compliance Costs for a Functional Chrome Plating Facility

Item	Cost (2021$)	Unit	Basis
Hazardous waste disposal cost before conversion[1]	55,000	Per facility	Based on various quotes given by hazardous waste disposal companies
Trivalent chromium conversion equipment cost	4,000,000	1 system	Based on one estimate of a proposed trivalent chromium functional plating technology by equipment manufacturer. It is unclear if this will be representative of the actual cost but may reflect an upper bound.
Trivalent chromium plating operating cost	20	Per kamp-hr	Based on one estimate of a proposed trivalent chromium functional plating technology by equipment manufacturer
Hexavalent chromium plating operating cost	2.50	Per kamp-hr	Based on one estimate of a proposed trivalent chromium functional plating technology by equipment manufacturer
Source testing	17,000	1 test	Based on quote from source testing contractor
Add-on control system	133,000	1 system	Based on quote from equipment provided
Best management practice	5,287	3 drip trays 3 tank labels 1 barrier from grinding area	Based on South Coast AQMD Rule 1469 economic impact assessment
Building modifications	17,241	1,000 square feet of facility 4 closed openings	Based on South Coast AQMD Rule 1469 economic impact assessment
Parameter monitoring system for existing control systems	2,618	2 static pressure gauges 2 difference pressure gauges	Based on South Coast AQMD Rule 1469 economic impact assessment

[1] Staff obtained quotes in 2022, cost estimates are assumed to be in 2021$.

Costs shown in Tables IX.5 and IX.6 are used together with the total number of facilities in each of the chrome plating categories (shown in Table IX.4) and the associated requirement to each facility to calculate total direct costs.

2. Direct Costs on Typical Businesses

Direct costs on typical businesses are discussed based on facility type including decorative chrome plating, hard chrome plating, and chromic acid anodizing facilities. For decorative

chrome plating facilities, their direct costs are mainly those associated with their transition to the trivalent chromium plating process and the associated ongoing costs compared to the hexavalent chromium plating process (baseline). The direct costs for all the facilities in the decorative chrome plating facilities are calculated by adding conversion and ongoing costs for trivalent chromium plating operations and then subtracting, starting in 2026, the ongoing costs for the original hexavalent chromium plating operations or baseline.

For functional chrome plating facilities, requirements that will impact costs include the conversion costs associated with the hexavalent chromium phase out as well as enhanced measures to reduce hexavalent chromium emissions while the hexavalent chromium processes are still in operation. These requirements pertain to functional chrome plating facilities (hard chrome plating and chromic acid anodizing facilities) and include source testing, add-on control systems, best management practices, building enclosures, and parameter monitoring systems. The total direct cost or incremental compliance cost is calculated by summing all costs for converting to and operating the trivalent chromium plating process and subtracting the operating cost for the baseline. The direct costs for all the functional chrome plating facilities are calculated by adding compliance cost to the Proposed Amendments and then adding cost of conversion in 2038, and then subtracting, after conversion year, the ongoing costs for the original hexavalent chromium plating operations.

Table IX.7 shows a summary of total direct costs including sales tax and without amortization for the three facility types for the analysis period. The total direct cost as shown in Table IX.7 is $691,675,142. Table IX.8 summarizes the direct cost for all facilities in each of the three facility types including sales tax and smooths the direct cost over the years by amortizing fixed cost for 15 years at 5 percent. As shown in Table IX.8, the total direct cost to all impacted chrome plating facilities with tax and amortization is $590,724,088 from 2025 through 2043.

Table IX.7 Approximate Number of Facilities and Total Unamortized Cost by Type

Facility Type	Quantity	Total Cost Including Conversion (2024 – 2043)[1]
Decorative Chrome Plating	51	$43,524,964
Functional Chrome Plating	-	-
A) Hard Chrome Plating	36	$525,325,220
B) Chromic Acid Anodizing	26	$122,824,958
Total	**113**	**$ 691,675,142**

[1] Value includes sales tax paid by the facilities.

Table IX.8 Summary of Direct Costs after Tax and Amortization for All Facilities, by Facility Type and by Year

Year	Decorative Facilities Fixed Cost[1] ($)	Decorative Facilities Ongoing Cost[2] ($)	Hard Facilities Fixed Cost[1] ($)	Hard Facilities Ongoing Cost[2]($)	Anodizing Facilities Fixed Cost[1] ($)	Anodizing Facilities Ongoing Cost[2]($)	Total ($)
2025	0	0	349,016	0	68,952	0	417,968
2026	3,627,476	1,340,188	231,789	0	58,295	0	5,257,747
2027	1,681,469	1,340,196	290,750	0	100,878	0	3,413,294
2028	1,681,469	1,340,208	290,750	0	100,878	0	3,413,305
2029	1,681,469	1,340,220	349,712	0	143,461	0	3,514,862
2030	1,681,469	1,340,232	349,712	0	143,461	0	3,514,874
2031	1,681,469	1,340,245	408,673	0	186,045	0	3,616,432
2032	1,681,469	1,340,260	408,673	0	186,045	0	3,616,446
2033	1,681,469	1,340,276	467,635	0	228,628	0	3,718,008
2034	1,681,469	1,340,295	467,635	0	228,628	0	3,718,026
2035	1,681,469	1,340,315	526,596	0	271,211	0	3,819,592
2036	1,681,469	1,340,338	526,596	0	271,211	0	3,819,614
2037	1,681,469	1,340,363	585,558	0	313,795	0	3,921,184
2038	1,681,469	1,340,389	17,644,714	60,702,184	12,634,297	1,281,011	95,284,063
2039	1,681,469	1,340,416	15,281,062	60,703,427	10,927,215	1,281,037	91,214,626
2040	1,681,469	1,340,444	15,049,273	60,704,687	10,868,920	1,281,064	90,925,857
2041	0	1,340,472	15,049,273	60,705,972	10,868,920	1,281,091	89,245,728
2042	0	1,340,501	14,990,312	60,707,267	10,826,336	1,281,118	89,145,535
2043	0	1,340,531	14,990,312	60,708,602	10,826,336	1,281,146	89,146,927
Total	27,168,035	24,125,889	98,258,045	364,232,138	69,253,513	7,686,468	590,724,088

[1] Fixed cost in this table includes tax and amortization.
[2] Ongoing cost in this table includes tax.

The direct cost on a typical business is calculated by dividing the total cost to the category by the number of facilities in that category. Table IX.9 summarizes the average direct cost for one facility including sales tax and after amortizing fixed cost for 15 years at 5 percent. As shown in Table IX.9, the average cost per facility for decorative facilities are fairly steady through the initial 15 years at slightly over $59,000 per year while average cost per facility for the hard chrome plating and chromic acid anodizing facilities increases fairly steadily until 2038 when it peaks around $2.1 million and $470,000 per year, respectively, due to the hexavalent chromium usage phase out.

Table IX.9 Average Per Facility Total Direct Cost after Tax and Amortization by Year

Year	Decorative Chrome Plating Facility ($)	Hard Chrome Plating Facility ($)	Chromic Acid Anodizing Facility ($)
2025	0	9,695	2,652
2026	97,405	6,439	2,242
2027	59,248	8,076	3,880
2028	59,249	8,076	3,880
2029	59,249	9,714	5,518
2030	59,249	9,714	5,518
2031	59,249	11,352	7,156
2032	59,250	11,352	7,156
2033	59,250	12,990	8,793
2034	59,250	12,990	8,793
2035	59,251	14,628	10,431
2036	59,251	14,628	10,431
2037	59,252	16,265	12,069
2038	59,252	2,176,303	535,204
2039	59,253	2,110,680	469,548
2040	59,253	2,104,277	467,307
2041	26,284	2,104,312	467,308
2042	26,284	2,102,711	465,671
2043	26,285	2,102,748	465,672
Total	**1,005,763**	**12,846,950**	**2,959,230**

3. Direct Costs on Small Businesses

The number of small businesses in each of the three impacted business types were estimated based on data from Dun & Bradstreet. The results are summarized in Table IX.10. As shown in Table IX.10, about 92 percent of the impacted chrome plating businesses are small businesses. Therefore, direct costs to typical businesses as discussed in Section IX.(B)(2) is assumed to be the same as direct costs to small businesses.

Table IX.10 Summary of Impacted Businesses

Category (NAICS 332813)	Number of Businesses	Estimated Percent of Small Businesses
Decorative Chrome Plating	51	95%
Functional Hard Chrome Plating	36	91%
Functional Chromic Acid Anodizing	26	86%
Total	113	92%

4. Direct Costs on Individuals

There are no direct costs on individuals due to the Proposed Amendments. However, there may be indirect costs as a result of potential passed through costs from chrome plating facilities. For facilities that convert from using hexavalent chromium plating to trivalent chromium plating, the cost of plated parts would be higher, and the facilities may want to charge more for their services.

C. Benefits

1. Benefits to Typical Businesses

Because the Proposed Amendments will phase out the use of hexavalent chromium in chrome plating, staff expect chrome plating facilities will need to switch from their current hexavalent chromium plating equipment to trivalent chromium plating equipment in order to operate in California after the phase out dates. In this situation, companies involved with the construction, installation, and manufacturing of trivalent chromium plating equipment will see increased business from the phase out. Manufacturers and sellers of trivalent chromium compounds used in the trivalent chromium plating processes and any other associated chemicals and solvents required for the plating bath with the trivalent chromium plating process will also benefit from the increased sales.

Some decorative plating facilities may not wish to convert to trivalent chromium because they believe their customers will not accept the deposition color. Therefore, the Proposed Amendments may create opportunities for design, research, engineering, construction, and project management firms to design and research new technologies for a less toxic or nontoxic alternative to hexavalent chromium. Some of these innovative technologies may be manufactured in California and, in these cases, would benefit Californian businesses and provide jobs for California.

2. Benefits to Small Businesses

Small businesses that offer construction services needed for trivalent chromium plating processes will have an increase in business when decorative chrome plating and functional chrome plating facility operators switch to trivalent chromium plating. For functional chrome plating facilities, small businesses that offer construction services for building enclosure and for source testing will have an increase in business before hexavalent chromium use is phased out.

3. Benefits to Individuals

The Proposed Amendments are expected to reduce hexavalent chromium emissions and exposure statewide and to benefit disadvantaged communities that are located near chrome plating facilities. The Proposed Amendments will benefit California residents by minimizing cancer risk to individual residents and off-site workers near chrome plating facilities. Emissions reductions may also minimize occupational exposure and benefit on-site workers,

including chrome plating operators and other individuals who work at facilities where chrome plating operations occur.

A co-benefit of the Proposed Amendments will be the elimination of PFAS emissions from chrome plating operations. Because the Proposed Amendments phase out the use of hexavalent chromium in decorative and functional plating processes, it will also eliminate PFAS, a toxic fluorinated compound present in many fume suppressants. Replacement trivalent chromium plating operations do not need PFAS-containing fume suppressants, but rather use a non-PFAS wetting agent, as a direct component of the plating bath, to control emissions of trivalent chromium. As a result, reduced exposures to these toxic chemicals will provide additional public health, air quality, and water quality benefits for Californians.

D. Fiscal Impacts

Discussed herein are the anticipated fiscal impacts of the Proposed Amendments to local government and state government. The Proposed Amendments are not anticipated to impact the federal government. More detailed information can be found in Appendix C.

1. Local Government

There are no direct costs to local governments. Decorative and functional chrome plating businesses are all small quantity generators of hazardous waste. Local enforcement authorities (typically county hazardous waste materials agencies) conduct inspections of such businesses. Because the Proposed Amendments will decrease the amount of hazardous waste generated at the chrome plating facilities, staff expect the number of inspections by local enforcement authorities to the chrome plating facilities will decrease.

Districts with chrome plating facilities will receive permit modification fees as revenue. In the short-term, Districts may incur a slight increase in workload due to issuing new or modified permits to decorative plating businesses that convert to trivalent chromium and modified permits to functional plating businesses that are required to install building enclosures or add-on device(s). However, the workload to Districts will be offset by the fees that they will collect from the same businesses.

Local government will also receive sales tax as a result of the Proposed Amendments. The total amount of permit fee revenue and local sales tax is estimated to be $30.4 million over the analysis period when no additional decrease of demand is assumed. For the potential scenarios where additional decreases in demand result in businesses closing or leaving the State rather than converting to trivalent chromium, local government would not collect permit fees, permit modification fees, or sales tax from the sales of equipment and materials from those businesses. The estimated resulting revenue to local government due to the Proposed Amendments during implementation totals to $22.8 million, $15.2 million, and $7.6 million in the analytical period corresponding to additional 25 percent, 50 percent, and 75 percent in demand for chrome plated parts in California. The average of the four scenarios is $19 million.

2. State Government

There is no direct cost impact to state government. However, the Proposed Amendments will increase the sales of tanks, chemicals needed for the trivalent chromium plating process, add-on emission control equipment, building enclosure materials, and equipment/materials needed to implement best management practices, which would result in an increase in sales tax revenue collected by the state. For this analysis, a combined State and local sales tax rate of 8.6 percent is used with 3.94 percent going towards State sales tax and the remainder going towards local sales tax.

Under the scenario where there is no additional loss in demand, there is no fiscal impact anticipated due to the Proposed Amendments in 2024, but businesses will incur costs in 2025 for add-on controls and in 2026 for decorative chrome plating facilities to comply with the January 1, 2027, phase out requirement. The total estimated sales tax revenues due to the Proposed Amendments in the analysis period is about $23.7 million.

If facilities elect to close or leave the State, less sales tax would be collected from the sale of tanks, chemicals, and other materials and equipment. In addition, state revenue from corporate income tax and personal income tax would decrease if these businesses were not replaced and workers did not transition into other positions. Staff used a 5-year average pre-tax profit margin of 8.39 percent and the corporate income tax rate of 8.84 percent to calculate the potential loss of corporate income tax under the scenarios of an additional 25, 50, 75 percent decrease in demand.[78,79] Staff also used the REMI average annual wage rate in the chrome plating industry (NAICS code 3328) of $58,724 and the average annual income tax rate of 2.88 percent to calculate the potential loss of personal income tax. Staff took the average personal income tax of $1,694 by filing types divided by the average annual wage of $58,724 in 2021 to reach to personal income tax rate of 2.88 percent.

Staff anticipate that there will be no fiscal impact in 2024, with initial costs to incur in 2025 for add-on controls and in 2026 to meet decorative chrome plating phase out date of January 1, 2027. The estimated resulting revenue to state government due to the Proposed Amendments during implementation totals to -$53.6 million, -$130.9 million, and -$208.1 million in the analytical period when additional loss of demand leads to elimination of 25 percent, 50 percent, and 75 percent of the chrome plating demand in California. The average of the four scenarios capturing no additional loss of demand through 75 percent loss of demand is -$92.2 million.

[78] Bizminer, Industry Financial Profile: Electroplating, Plating, Polishing, Anodizing & Coloring [332813], Release Date: July 2022

[79] State of California Franchise Tax Board, 2022, business tax rate

E. The Creation or Elimination of Jobs within the State of California.

Table IX.11 presents the estimated impacts of the Proposed Amendments on total employment in California across all industries for the 4 scenarios described above. The REMI simulation shows some job increases, particularly in years 2025, 2026, and 2038 due to increases in final demand in various industries to support the phase out of hexavalent chromium and to implement add-on measures. These job increases are primarily due to increased demand for new tanks and other expenditures for trivalent chromium plating, in advance of the deadlines to comply with the phase out of hexavalent chromium in 2027 for decorative facilities and 2039 for functional facilities. For all scenarios analyzed, most years of the analysis are associated with an overall decrease in job growth across the California economy due to the ongoing costs of the Proposed Amendments. The maximum negative impact on jobs is anticipated to occur toward the end of the analytical period with a net decrease of less than 0.04 percent of the California baseline employment levels which are estimated to be approximately 27.1 million jobs by 2043.

The Form 399, a Department of Finance form that is required for regular rulemaking actions, reports values of 28 jobs created and 4319 jobs eliminated. These are the average values of jobs created and eliminated across the four scenarios in 2043, the final year of the analysis. Jobs eliminated will mostly be from the manufacturing sector, including the chrome plating industry.

Table IX.11 Total California Employment Impacts of the Proposed Amendments

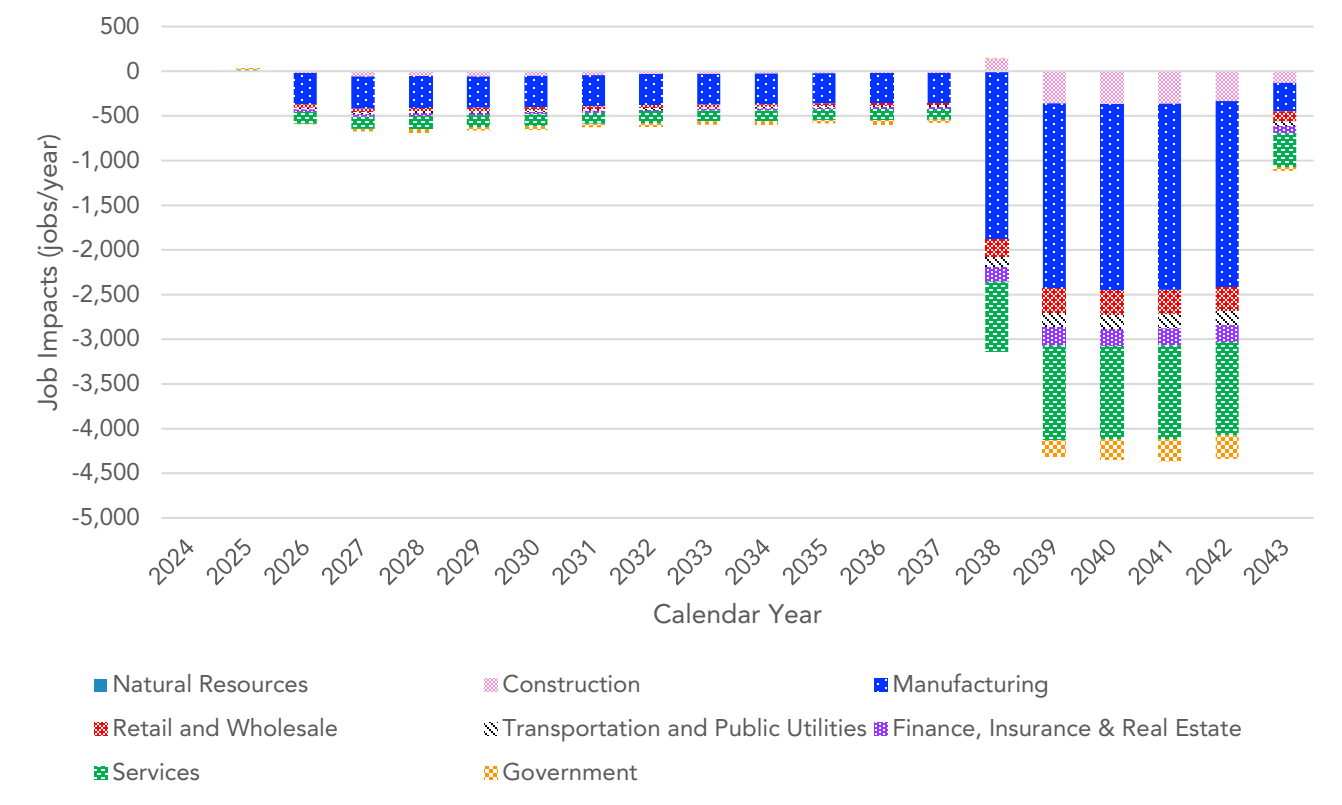
	No Additional Decrease in Demand	No Additional Decrease in Demand	Additional 25% Decrease in Demand	Additional 25% Decrease in Demand	Additional 50% Decrease in Demand	Additional 50% Decrease in Demand	Additional 75% Decrease in Demand	Additional 75% Decrease in Demand
Year	Jobs Created	Jobs Eliminated	Jobs Created	Jobs Eliminated	Jobs Created	Jobs Eliminated	Jobs Created	Jobs Eliminated
2024	0	0	0	0	0	0	0	0
2025	26	0	26	0	26	0	26	0
2026	78	-6	15	-388	13	-831	12	-1,275
2027	5	-42	2	-463	0	-887	1	-1,312
2028	0	-48	1	-472	1	-895	2	-1,319
2029	4	-44	2	-457	2	-872	4	-1,289
2030	0	-54	1	-457	4	-861	7	-1,266
2031	4	-46	3	-436	6	-828	9	-1,222
2032	0	-54	2	-436	7	-820	11	-1,205
2033	4	-46	5	-419	8	-794	13	-1,172
2034	0	-53	4	-422	9	-793	15	-1,165
2035	3	-46	6	-409	10	-776	17	-1,144
2036	0	-52	4	-416	10	-783	17	-1,150
2037	3	-45	6	-406	12	-769	18	-1,134
2038	734	-264	418	-2,254	213	-4,357	138	-6,592
2039	26	-1,030	17	-3,225	17	-5,434	18	-7,646
2040	17	-1,047	17	-3,256	18	-5,471	23	-7,693
2041	17	-1,104	17	-3,287	21	-5,478	30	-7,677
2042	16	-1,126	18	-3,275	25	-5,436	38	-7,606
2043	16	-1,129	19	-3,247	29	-5,378	47	-7,522

Figure IX.1 shows the impacts on the major sectors of the California economy. As staff assumed four scenarios of additional decrease of demand, Figure IX.1 shows the average of the four scenarios. Impacts on job growth appear to be largest after 2038, when the functional chrome plating facilities convert to using trivalent chromium. As the requirements of the Proposed Amendments are implemented, the chrome plating industry will see direct increases in production costs, which would result in decreases in employment growth. Sectors that see increases in final demand would see an increase in employment growth in the first year.

The manufacturing sector is estimated to have the largest negative impacts on jobs loss, because the chrome plating industry bears most of the direct costs of the Proposed Amendments. Impacts never exceed 0.4 percent of the baseline in any of the major sectors.

The Services sector is estimated to experience the second greatest negative employment growth due to the production cost increase due to chrome plating. Production cost increase in general will have a negative impact on the economy and decrease the employment. For example, car services shops, offices of health practitioners, and restaurants may see production cost increases for their use of chrome plated products because prices for chrome plated products are expected to go up. However, these impacts do not exceed 0.02 percent of the baseline levels.

Figure IX.1 California Employment Impacts of Proposed Amendments by Major Sector



F. The Creation of New Business or the Elimination of Existing Businesses within the State of California.

The REMI model cannot directly estimate the statewide creation or elimination of businesses. However, the trend of increasing production costs for the chrome plating industry has the potential to result in a contraction or decrease in business in this industry. On the other hand, the projected increase in demand for tanks, building enclosures, add-on control systems, source testing, and other requirements of the Proposed Amendments have the potential to result in an increase in growth for businesses in supporting industries. In short, the direct costs of the Proposed Amendments themselves would not be anticipated to result in significant changes in business elimination within California in relation to the total California economy. The overall jobs and output growth impacts are small relative to the California economy, about 0.04 percent in the years of greatest impact, when the most additional decrease of demand, 75 percent, is assumed.

As analyzed above, the direct costs of the Proposed Amendments themselves would not be anticipated to result in significant changes in business elimination within California. The overall jobs and output growth impacts are small relative to the California economy, about 0.04 percent in the years of greatest impact.

Stakeholders have raised concerns that the products created from the hexavalent chromium plating and trivalent chromium plating processes are different and switching to trivalent chromium would result in a decrease in demand for products that are chrome plated in California. Currently there is no data available to CARB staff that provides estimates as to how much the demand for chrome plating could decrease in California.

Although some replacements to hexavalent chromium in functional chrome plating are commercially available, they do not yet cover all applications for hard chrome plating and chromic acid anodizing. Other alternatives are at various stages of development but may not cover all applications of hard chrome plating and chromic acid anodizing within the timeframe specified in the Proposed Amendments. The lack of replacement technology would force California businesses that wish to continue providing hexavalent chromium plated products to their customers to either ship those parts out-of-state to be plated or move their chrome plating operations out-of-state. The Proposed Amendments provide opportunities to assess the state of the alternative technologies using technology reviews. These reviews will help determine the need for adjusting the phase out dates for functional chrome facilities.

Staff expect business elimination in the chrome plating industry in the scenario where chrome plating demand is leaving California. Please see Section IX.(H) for a detailed analysis and estimate of facility closure.

G. The Impact on Businesses Currently Doing Business within the State of California.

Gross output is used as a measure for business impacts because it represents an industry's sales or receipts and tracks the quantity of goods or services at every stage of production in a given time period. California output is the sum of output in each private industry and State and local government as it contributes to California's Gross State Product (GSP) and is affected by production cost and demand changes. As production cost increases or demand decreases, output is expected to contract, but as production costs decline or demand increases, industry would likely experience output growth.

As shown in Table IX.12, the REMI analysis of the Proposed Amendments projects an initial increase in output growth in 2025 and 2038 followed by a decrease in output growth in subsequent years of the analysis. The decrease in statewide output growth is estimated to grow till 2043 and is likely to diminish over time after its peak near 2043. When additional loss of chrome plating demand is assumed, the Proposed Amendments are expected to result in greater and earlier negative impacts to the gross output over the analytical period. The state is going to experience a much slower gross output growth starting 2026, compared to the baseline and to the scenario with no additional loss of demand. The negative impact to the gross output is never anticipated to exceed 0.04 percent in any given year in all of scenarios analyzed. The negative impact will spread across industries as well with the manufacturing and service industries being hit the most. In the scenario with highest demand loss, 75 percent, the manufacturing sector will experience the greatest negative impact of -1,149 million, 0.12 percent of the baseline level, in 2041, and the service industry will experience the greatest negative impact of -325 million, 0.01 percent of the baseline level, in 2043.

Table IX.12 Change in California Output Growth Due to the Proposed Amendments, Four Scenarios

Calendar Year	Baseline California Output (2021 Trillion$)	No Additional Decrease, % Change	No Additional Decrease, Change in Total Output (2021 M$)	25% Additional Decrease, % Change	25% Additional Decrease, Change in Total Output (2021 M$)	50% Additional Decrease, % Change	50% Additional Decrease, Change in Total Output (2021 M$)	75% Additional Decrease, % Change	75% Additional Decrease, Change in Total Output (2021 M$)
2023	5.6	0	0	0	0	0	0	0	0
2024	5.8	0	0	0	0	0	0	0	0
2025	5.9	0	5	0	5	0	5	0	5
2026	6.0	0	19	0	-67	0	-153	0	-239
2027	6.1	0	-8	0	-90	0	-172	0	-254
2028	6.1	0	-11	0	-93	0	-175	0	-257
2029	6.2	0	-9	0	-90	0	-171	0	-251
2030	6.3	0	-13	0	-91	0	-169	0	-247
2031	6.4	0	-10	0	-86	0	-161	0	-237
2032	6.4	0	-13	0	-86	0	-160	0	-233
2033	6.5	0	-11	0	-82	0	-153	0	-225
2034	6.6	0	-14	0	-83	0	-153	0	-223
2035	6.7	0	-11	0	-81	0	-150	0	-219
2036	6.8	0	-14	0	-83	0	-153	0	-222
2037	7.0	0	-12	0	-80	0	-149	0	-218
2038	7.1	0	196	-0.01	-434	-0.02	-1,065	-0.02	-1,697
2039	7.2	0	-213	-0.01	-821	-0.02	-1,430	-0.03	-2,040
2040	7.4	0	-231	-0.01	-842	-0.02	-1,454	-0.03	-2,066
2041	7.5	0	-257	-0.01	-863	-0.02	-1,470	-0.03	-2,078
2042	7.7	0	-272	-0.01	-871	-0.02	-1,471	-0.03	-2,073
2043	7.8	0	-281	-0.01	-874	-0.02	-1,467	-0.03	-2,062

H. Significant Statewide Adverse Economic Impact Directly Affecting Business, Including Ability to Compete

For decorative plating, some industry stakeholders have expressed concerns that consumers may not accept trivalent chromium plated products as an alternative to hexavalent chromium plated products. In that case, chrome plating facilities may not be able to pass the cost to consumers and the demand for chrome plating services from California businesses would decrease. In addition, for functional chrome plating, the replacement technology development is not as clear. Replacements for hexavalent chromium for hard chrome plating and chromic acid anodizing are under development but may not cover all applications of hard chrome plating within the time frame specified in the amendments. The lack of replacement technology would force California businesses that wish to continue providing hexavalent chromium plated products to their customers to either ship those parts out-of-state to be plated or move their chrome plating operations out-of-state.

Staff do not have data to predict how many consumers would reject trivalent chromium plating; therefore, staff analyzed four scenarios with 0 percent, 25 percent, 50 percent, and 75 percent additional decrease in demand. To be conservative, staff assumed that the same level of investment to convert to trivalent chromium is made by chrome plating facilities to comply with the Proposed Amendments.

To estimate the value of demand decrease, staff estimated the current total sales and employment of the chrome plating industry using a combination of two datasets: sales and employment estimates within the Dun & Bradstreet database and 2019 District reported data on annual amp-hour in chrome plating facilities. The facility inventory data was compiled by CARB staff during the rulemaking process.

The Dun & Bradstreet database does not include sales and employment data for all facilities. To estimate the total sales and employment for the chrome plating industry, staff used average sales and employment per amp-hour and multiplied these values by the total amp-hours in the industry. Several facilities were estimated to have very high or low costs per amp-hour or very high or low employment per amp-hour. Staff removed these outliers before using the data to estimate an average sales and employment per amp-hour.

As shown in Table IX.13, the chrome plating industry in California is estimated to generate an annual output of $1.23 billion dollars and employs 4,599 people.

Table IX.13 Estimated Annual Sales Volume and Employment in Chrome Plating Facilities

Facility Type	Number of Facilities[1]	Estimated Sales[2] ($2021M)	Estimated Employment[2]	Total Million Amp-Hr[3]
Decorative	51	$134	885	322
Hard	36	$388	1,550	2,752
Anodizing	26	$706	2,164	58
Total	**113**	**$1,228**	**4,599**	**3,133**

[1] Number of facilities based on 2021 information obtained from air districts
[2] Based on Dunn & Bradstreet data and 2019 data from air districts
[3] Based on 2019 data from local air districts

Staff then modeled a decrease of 25, 50, and 75 percent of the sales estimated in Table IX.13 into the REMI model. The REMI results indicate notable differences in impacts to the California economy and to the chrome plating industry if the demand for chrome plating moves outside of California. Table IX.14 shows the estimated employment loss to chrome plating facilities under the four scenarios analyzed: the main scenario, where there is no additional decrease in final demand for chrome plating beyond what the REMI model estimates would occur as a response to increased prices, and scenarios with an additional 25, 50, and 75 percent decrease in final demand for chrome plating. The maximum percent change in employment to the chrome plating industry is used to estimate the number of facility closures. The values in Table IX.14 for decorative facilities reflect the maximum annual job decrease in year 1 to year 15. The values in Table IX.14 for functional facilities reflect the maximum annual job decrease after year 15 minus the minimum annual job decrease in year 1 to year 15, which is likely the maximum employment loss in functional facilities.

For example, under the analysis where the direct costs of compliance to chrome plating facilities are assumed to be passed to the businesses and individual customers who use chrome plating products and services, and later to the businesses and individual consumers of those businesses who received the chrome plating products and services, the REMI model estimates a loss of 7 jobs at decorative chrome plating facilities and 196 jobs at functional chrome plating facilities. If the Proposed Amendments instead resulted in a 75 percent decrease in chrome plating demand, there is estimated to be a loss of 674 jobs at decorative chrome plating facilities, 2,978 jobs at functional chrome plating facilities.

Table IX.14 Estimated Employment Loss and Facility Closures to Chrome Plating Facilities

Scenario	Estimated Employment Loss	Percent Change in Employment	Estimated Facility Closures
No additional decrease in demand (Decorative Chrome Plating Facilities)	7	1	<1
25% decrease in demand (Decorative Chrome Plating Facilities)	227	26	13
50% decrease in demand (Decorative Chrome Plating Facilities)	450	51	26
75% decrease in demand (Decorative Chrome Plating Facilities)	674	76	39
No additional decrease in demand (Functional Chrome Plating Facilities)	196	5	3
25% decrease in demand (Functional Chrome Plating Facilities)	1119	30	19
50% decrease in demand (Functional chrome Plating Facilities)	2048	55	34
75% decrease in demand (Functional Chrome Plating Facilities)	2978	80	50

I. The Competitive Advantages or Disadvantages for Businesses Currently Doing Business within the State

The Proposed Amendments would be the most health protective among all the national and District hexavalent chromium emission standards. All decorative chrome plating facilities operating in California will need to cease using hexavalent chromium by January 1, 2027. The currently available alternative, trivalent chromium, is much less toxic than the hexavalent chromium and is not a known carcinogen. All functional chrome plating facilities in California will need to go through regular source testing and comply with enhanced housekeeping, building enclosure requirements, and best management practices to control their hexavalent chromium emissions. Further, functional plating facilities will have to cease using hexavalent chromium starting in 2039.

The Proposed Amendments would result in production cost increases for California chrome plating facilities. For decorative chrome plating facilities, trivalent chromium plating is currently available, but the production cost is higher than for hexavalent chromium plating. These increases in production costs, assuming they can be passed-though to the chrome plating customers, may result in a competitive disadvantage relative to out-of-state facilities that are not subject to the Chrome Plating ATCM. In addition to cost increases, decorative chrome plating facility operators and chrome plating industry representatives have expressed

concerns for customer acceptance of trivalent chromium plated parts. The major reason expressed by some industry stakeholders is that trivalent chromium plated parts are slightly different in color. Although there is ongoing work on additives to improve color matching, customer preference for hexavalent chromium plated parts and the availability of decorative hexavalent chromium plating in other states may also result in a competitive disadvantage for California decorative chrome plating facilities.

The Proposed Amendments may also result in a competitive disadvantage for California functional chrome plating facilities relative to out-of-state facilities due to cost increase. Although some replacements to hexavalent chromium in functional chrome plating are commercially available, they do not yet cover all applications for hard chrome plating and chromic acid anodizing. Other alternatives are at various stages of development but may not cover all applications of hard chrome plating and chromic acid anodizing within the time frame specified in the Proposed Amendments. Because of this, the Proposed Amendments do not phase out hexavalent chromium from functional chrome plating facilities until year 15 and require CARB to conduct two technology reviews to determine if amendments to the phase out date or other requirements may be necessary in light of the status of the development of alternative technologies. Therefore, the Proposed Amendments may encourage functional chrome plating facilities in California, and businesses which supply equipment and materials to them, to invest in research and development to improve the trivalent chromium plating process and other alternatives to hexavalent chromium. Additionally, the availability of functional hexavalent chromium plating in other states may result in a competitive disadvantage for California chrome plating facilities, especially if alternatives are unable to meet customer performance specifications.

J. The Increase or Decrease of Investment in the State

Private domestic investment consists of purchases of residential and nonresidential structures and of equipment and software by private businesses and nonprofit institutions. It is used as a proxy for impacts on investments in California because it provides an indicator of the future productive capacity of the economy.

The relative changes to growth in private investment for the Proposed Amendments are displayed in Table IX.15. The impacts to private investment diminish over time after 2026. After 2038, there is significant increase in the magnitude of the impact due to the increase in direct costs on the chrome plating industry, specifically on the hard chrome plating and chromic acid anodizing facilities, during these years. The increased production cost is likely to increase price levels in general in the economy, force business owners to decrease relative wage levels, and as a result will decrease private investment. The impact from the increase in direct cost is somewhat offset by the impacts from final demand in 2038. All impacts in the period of analysis do not exceed 0.02 percent of baseline investment in any year.

In the scenarios where an additional 25 percent, 50 percent, and 75 percent of the demand and employment in chrome plating are eliminated, the economy will expect a greater decrease in private investment. This decrease is not expected to exceed 0.04 percent in any given year.

Table IX. 15 Change in Gross Domestic Private Investment Growth Due to the Proposed Amendments

Calendar Year	No Additional Decrease, % Change	No Additional Decrease, Change in Total Investment (2021M$)	25% Additional Decrease, % Change	25% Additional Decrease, Change in Total Investment (2021M$)	50% Additional Decrease, % Change	50% Additional Decrease, Change in Total Investment (2021M$)	75% Additional Decrease, % Change	75% Additional Decrease, Change in Total Investment (2021M$)
2023	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0
2026	0	0	0	-8	0	-17	-0.01	-26
2027	0	-2	0	-12	0	-23	-0.01	-34
2028	0	-2	0	-14	0	-25	-0.01	-36
2029	0	-2	0	-13	0	-24	-0.01	-35
2030	0	-3	0	-13	0	-23	-0.01	-33
2031	0	-2	0	-12	0	-21	-0.01	-30
2032	0	-2	0	-11	0	-19	-0.01	-28
2033	0	-2	0	-10	0	-18	0	-26
2034	0	-2	0	-10	0	-17	0	-24
2035	0	-2	0	-9	0	-16	0	-23
2036	0	-2	0	-9	0	-16	0	-23
2037	0	-2	0	-9	0	-15	0	-22
2038	0	-10	-0.01	-55	-0.02	-100	-0.02	-144
2039	-0.01	-44	-0.02	-95	-0.02	-148	-0.03	-200
2040	-0.01	-53	-0.02	-108	-0.03	-163	-0.03	-219
2041	-0.01	-56	-0.02	-111	-0.03	-167	-0.03	-223
2042	-0.01	-56	-0.02	-110	-0.02	-164	-0.03	-219
2043	-0.01	-54	-0.02	-106	-0.02	-159	-0.03	-212

K. The Incentives for Innovation in Products, Materials, or Processes

The phase out of hexavalent chromium plating is anticipated to promote innovation in trivalent chromium plating technologies, which is available and is becoming more prevalent in the decorative plating industry. Facilities would be incentivized to further improve their trivalent chromium plating technologies and services for their customers to better compete in the market.

For functional chrome plating, there is currently no widely available alternative to hexavalent chromium. The phase out of hexavalent chromium in functional chrome plating in 15 years after the regulation effective date encourages additional development of alternatives to hexavalent chromium. Due to the uncertainties in innovation and technology development for alternatives to hexavalent chromium in hard chrome plating and chromic acid anodizing facilities, CARB staff will conduct two technology assessments prior to the phase out date and may propose amendments to the phase out date, if needed.

X. Evaluation of Regulatory Alternatives

Government Code section 11346.2, subdivision (b)(4) requires CARB to consider and evaluate reasonable alternatives to the proposed regulatory action and provide reasons for rejecting those alternatives. This section discusses alternatives evaluated and provides reasons why these alternatives were not included in the proposal. As explained below, no alternative proposed was found to be less burdensome and equally effective in achieving the purposes of the regulation in a manner than ensures full compliance with the authorizing law. The Board has not identified any reasonable alternatives that would lessen any adverse impact on small business.

Staff solicited public input regarding alternatives for achieving the purposes of the Proposed Amendments throughout the development process and specifically at the technical workgroup meeting held on January 20, 2022. Due to COVID-19 restrictions, these technical workgroup meetings and other discussions were held virtually, and the industry, community, and public had the ability to speak or submit the questions online, as appropriate. Staff identified three alternatives to the Proposed Amendments that meet the requirements under State Administrative Manual (SAM) 6600 pertaining to the analysis of alternatives, which has been codified in the California Code of Regulations, Title 1, section 2002I(8).

A. Alternative 1: Short Phase Out

Alternative 1 has been evaluated in more detail in the SRIA (see Appendix C). This is a summary of the emission and cost impacts discussed together with the requirements. Alternative 1 contains more health protective requirements compared to the Proposed Amendments. All chrome plating facilities would be required to phase out the use of hexavalent chromium, with the functional facilities having an earlier phase out date compared to the Proposed Amendments. Major elements of Alternative 1 are listed below:

1. Decorative Chrome Plating

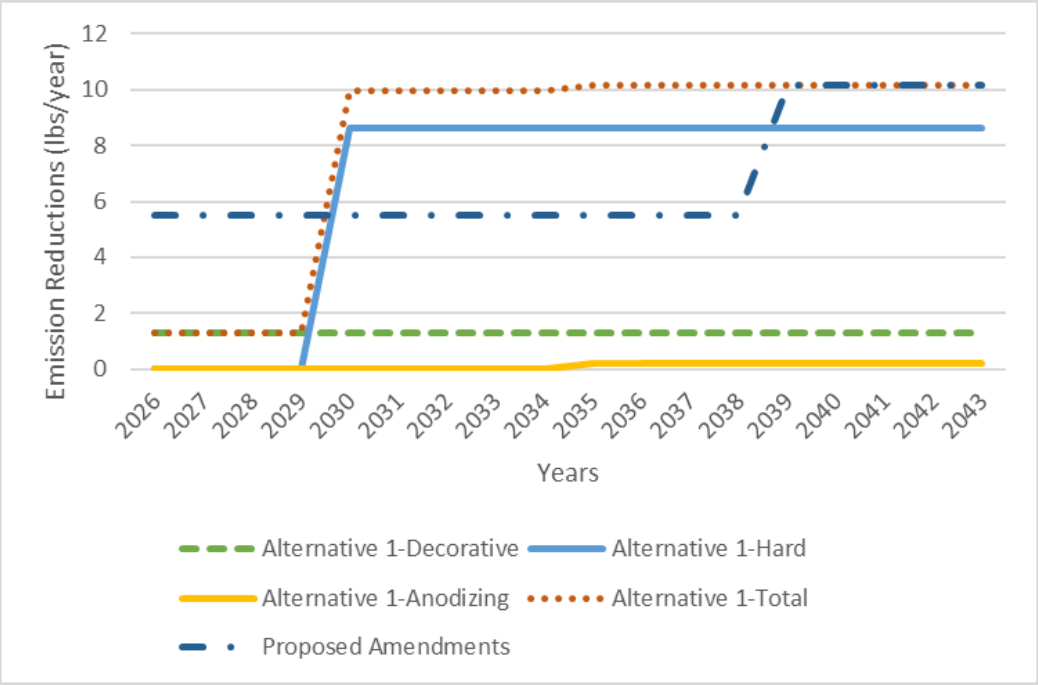
- Stop using hexavalent chromium for chrome plating within 2 years of the effective date (January 1, 2024) of the amended ATCM.
- Potential one-year extension for delays associated with transition (construction, permitting, etc.)

2. Functional Chrome Plating (Hard and Chromic Acid Anodizing)

- Hard chrome plating facilities: stop using hexavalent chromium for chrome plating by January 1, 2030.
- Chromic acid anodizing facilities: stop using hexavalent chromium for chrome plating by January 1, 2035.

Because Alternative 1 will phase out hexavalent chromium from functional facilities at an earlier date, the total amount of hexavalent chromium reduced is larger during the analysis period. Figure X.1 shows a comparison of the emissions for the Proposed Amendments and Alternative 1 as a function of time.

Figure X.1 Projected Annual Hexavalent Chromium Emissions Reductions for the Proposed Amendments and Alternative 1



The total direct cost for Alternative 1 over the analysis period is $1,306,569,0721 compared to the direct cost for the Proposed Amendments of $590,724,088. The cost-effectiveness of Alternative 1 is calculated to be $8,940,855 per pound of hexavalent chromium reduced compared to the $4,842,065 per pound of hexavalent chromium reduced estimated for the Proposed Amendments.

Although Alternative 1 achieves greater emissions benefits over the 20-year period of the SRIA analysis, staff rejected Alternative 1. Staff rejected this alternative because the total direct costs to the chrome plating industry is estimated to be over two times higher than the Proposed Amendments and has timelines that are likely to be insufficient for technology development for non-toxic or less toxic alternative processes to replace the hexavalent chromium processes. Due to the expected timelines for technological development and product testing in the hard chrome plating and chromic acid anodizing sectors, Alternative 1 could result in functional chrome plating facilities not having technologically feasible or commercially available options to replace hexavalent chromium for all hard chrome plating or chromic acid anodizing applications prior to the phase out. For example, military and aerospace standards could take up to 10 years of product testing before a replacement technology is available.

B. Alternative 2: No Phase Out

Alternative 2 has been evaluated in more detail in the SRIA (see Appendix C). A summary of the emission and cost impacts, which has been updated since the posting of the SRIA, is discussed together with the requirements here. Under this alternative, all decorative, hard chrome plating, and chromic acid anodizing facilities would be required to meet an emission limit which will yield less emissions benefits when compared to the Proposed Amendments. Alternative 2 provides additional health protection to residents of disadvantaged communities by requiring permanent total enclosures for facilities in those communities. The major elements of this alternative are:

1. Decorative Chrome Platers:

- No deadline to remove hexavalent chromium.
- Lower emission limit of 0.00075 mg/amp-hr to be met within two years of the effective date (or by January 1, 2026).
- All facilities must use add-on controls for hexavalent chromium plating.
- Implement provisions to mitigate fugitive emissions.
  - Building enclosure requirements.
  - Housekeeping and best management practices.
- Increased source testing frequency.
- Permanent Total Enclosures for facilities in disadvantaged communities.
- Add-on control requirements for hexavalent chromium containing non-plating tanks.
- Technology reviews to inform future ATCM amendments.

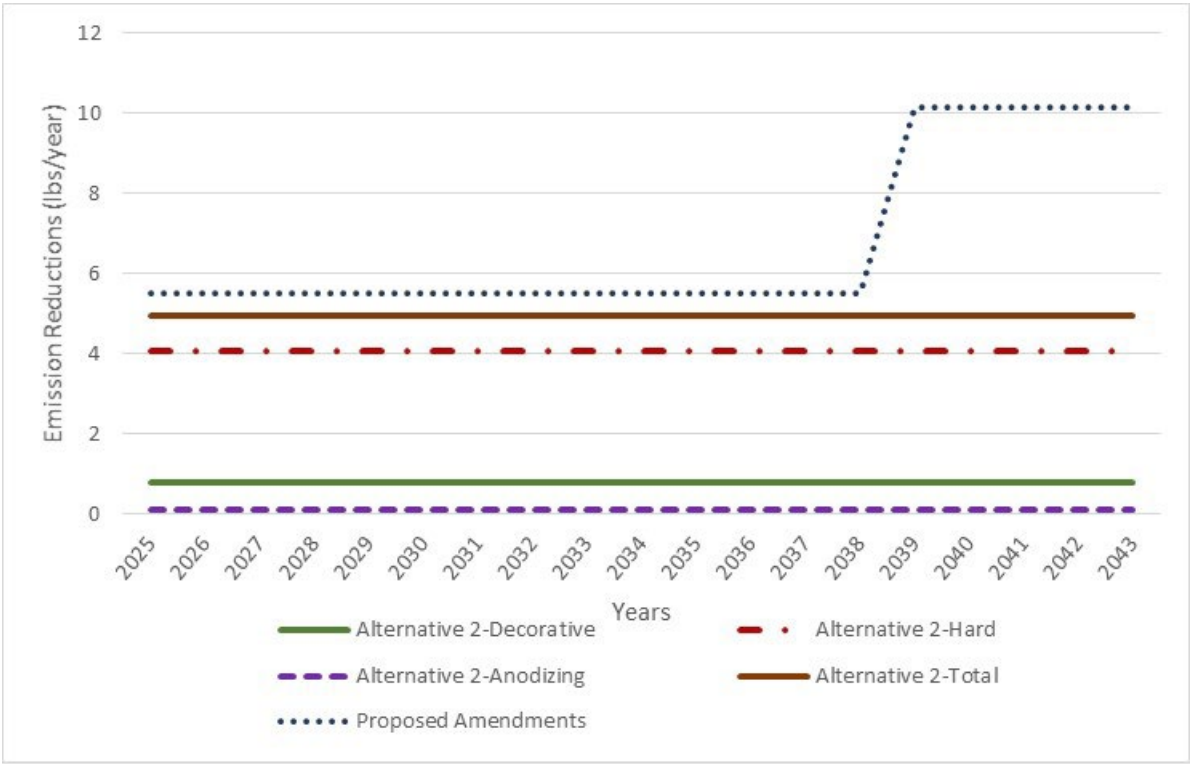
2. Functional Chrome Platers:

- No deadline to remove hexavalent chromium.
- Lower emission limit of 0.00075 mg/amp-hr to be met within 2 years of the effective date (or by January 1, 2026).
- Eliminate fume suppressant-only operations.
- Implement provisions to mitigate fugitive emissions

- Building enclosure requirements.
- Housekeeping and best management practices.
- Increased source testing frequency.
- Permanent total enclosures for facilities in disadvantaged communities.
- Add-on control requirements for hexavalent chromium containing tanks that are not chrome plating tanks.
- Technology reviews to inform future ATCM amendments.

Compared to the Proposed Amendments, Alternative 2 would result in less hexavalent chromium emission reductions from chrome plating facilities operating in California because of the removal of deadlines for converting to trivalent chromium for all decorative chrome plating, hard chrome plating, and chromic acid anodizing facilities. However, Alternative 2 would require permanent total enclosures (PTE) for facilities in disadvantaged communities. The PTE requirement would provide additional health protection to residents in disadvantaged communities at levels close to the Proposed Amendments because the capture efficiency for the PTE is estimated to be 100 percent. The total hexavalent chromium reduction for Alternative 2 is lower than the Proposed Amendments, however. Figure X.2 shows a comparison of emissions for Alternative 2 and the Proposed Amendments.

Figure X.2 Projected Hexavalent Chromium Emissions Reductions under Proposed Amendments and Alternative 2



Alternative 2 results in a one-time cost for engineering assessment/design, equipment procurement and installation, and ongoing cost primarily related to increased use of electricity, increased demand of insurance and administrative staff, and increased property tax for local government. It will increase the production cost of chrome plating and increase

sales and jobs in the industries related to the cost items. This would result in less total direct costs on chrome plating business owners compared to the Proposed Amendments, with a total direct cost of $77,831,001, a decrease of 87 percent from the total direct costs of the Proposed Amendments. The cost-effectiveness of Alternative 2 is estimated to be $860,974 per pound of hexavalent chromium reduced during the analysis period. Table X.1 shows a summary of the cost-effectiveness of the alternatives 1, 2 and that of the Proposed Amendments.

Table X.1 Summary of Cost-Effectiveness of the Proposed Amendments, Alternative 1 and Alternative 2

Proposal	Total Cost ($)	Emission Reduced (lb)	Cost-Effectiveness ($/lb)
Proposed Amendments	590,724,088	121	4,842,065
Alternative 1	1,306,569,0721	146	8,949,103
Alternative 2	77,831,001	89	874,506

Alternative 2 is estimated to result in cost impacts that are much smaller in magnitude than the Proposed Amendments. Alternative 2 requires facilities to employ enhanced best available control technologies, enhanced housekeeping requirements, and requires permanent total enclosures in disadvantaged communities. These measures will reduce hexavalent chromium exposure and health risk and reduce any fugitive emissions not captured by the control devices. However, the total amount of hexavalent chromium reduced is much less than that of the Proposed Amendments. Staff rejected Alternative 2 because this alternative still allows facilities to use hexavalent chromium and impedes the development of more environmentally-friendly technologies; therefore, it is less health-protective when compared with the Proposed Amendments, particularly in those communities that do not receive PTE protection.

C. Alternative 3: Extended Phase Out

Alternative 3 would allow continued operations of decorative and functional hexavalent chromium plating facilities until the extended phase out date of January 1, 2039. Major requirements for the decorative and functional hexavalent chromium plating facilities are as follows:

- Phase out of hexavalent chromium usage on January 1, 2039.
- Technology reviews by 2029 and every five years thereafter to inform future ATCM amendments.
- Lower emission limit of 0.00075 mg/amp-hr to be met by January 1, 2026.
- All facilities must use add-on controls for hexavalent chromium plating.
- Implement provisions to mitigate fugitive emissions.
- Building Enclosures.
- Housekeeping and best management practices.
- Increased source testing frequency or parameter monitoring.
- Add-on control requirements for hexavalent chromium containing tanks that are not chrome plating tanks

A qualitative comparison between Alternative 3 and the Proposed Amendments was made. Compared to the Proposed Amendments, Alternative 3 would result in less hexavalent chromium emission reduction from decorative chrome plating facilities operating in California because of the phase out date extension. Due to the extension, it is anticipated that decorative chrome plating facilities will be operating with hexavalent chromium plating process for a longer period of time. Because operating cost is higher for the trivalent chromium plating process, total direct cost for Alternative 3 would be lower compared to the Proposed Amendments. However, because Alternative 3 significantly delays emissions reductions and the related health benefits for 13 years from decorative chrome plating facilities, staff rejected this regulatory alternative.

D. Small Business Alternative

The Board has not identified any reasonable alternatives that would lessen any adverse impact on small business.

E. Performance Standards in Place of Prescriptive Standards

Government Code sections 11346.2, subdivision (b)(4)(A) and 11346.2, subdivision (b)(1) contain requirements for proposed regulations that would mandate the use of specific technologies or equipment.[80] The Proposed Amendments are performance-based and do not mandate the use of specific technologies or equipment; therefore, these Government Code requirements are not applicable.

F. Health and Safety Code Section 57005 Major Regulation Alternatives

CARB estimates the Proposed Amendments will have an economic impact on the state's business enterprises of more than $10 million in one or more years of implementation. CARB evaluated alternatives submitted to CARB and considered whether there was a less costly alternative or combination of alternatives that would be equally as effective in achieving increments of environmental protection in full compliance with statutory mandates within the same amount of time as the proposed regulatory requirements, as required by Health and Safety Code section 57005.[81]

XI. Justification for Adoption of Regulations Different from Federal Regulations Contained in the Code of Federal Regulations

U.S. EPA promulgated the Chromium Plating NESHAP, in 40 Code of Federal Regulations Part 63, Subpart N. The regulation was enacted because U.S. EPA identified hard and decorative chrome and chromic acid anodizing tanks as significant emitters of chromium

---

[80] *Government Code §11346.2(b), Division 3, Public Participation: Procedure for Adoption of Regulations.*
[81] *California Health and Safety Code § 57005, Division 37, Regulation of Environmental Protection*.

compounds, which are HAPs. This regulation established concentration standards for hard chrome plating facilities that could be met by the addition of forced ventilation systems, but add-on air pollution control devices were not necessarily required. In addition, the surface tension standards were established for decorative chrome plating facilities and chromic acid anodizing facilities.

On September 19, 2012, U.S. EPA further amended the Chromium Plating NESHAP to include the revisions to the emissions limits for total chromium, incorporate housekeeping requirements to minimize emissions not released from a stack (i.e., fugitive emissions), and phase out the use of fume suppressant that use PFOS. PFOS is an organic chemical identified as being potentially carcinogenic with health and safety concerns.[82] CARB subsequently required manufacturers to develop fume suppressant alternatives and have certified four non-PFOS-containing fume suppressants for use in California. Although, both U.S. EPA and CARB regulate hexavalent chromium emissions to a similar degree, the 2007 ATCM established more stringent emission limits than the limits specified in the NESHAP. The 2007 ATCM requires facilities to install add-on control where U.S. EPA allows facilities to meet emission limits through the use of fume suppressant alone. In addition, the 2007 ATCM considers receptor proximity and requires new facilities meet a 1,000-foot buffer zone of school, residential, or mixed use.

AB 617 requires CARB to prepare a statewide strategy to reduce emissions of TACs in communities that experience disproportionate burdens from exposure to air pollutants. CARB's 2018 Community Air Protection Blueprint (Blueprint) sets forth CARB's strategy to reduce air pollution in these communities. In the Blueprint, CARB restates a commitment to amend the 2007 ATCM in order to reduce pollution in communities impacted by emissions from stationary sources or other sources of hexavalent chromium emissions that impact these communities.

Hexavalent chromium is an extremely potent human carcinogen and was identified by CARB as a toxic air contaminant (TAC) with no known safe level of exposure. According to Health and Safety Code section 39666, subdivision (c), for those toxic contaminants for which the state board has not specified a threshold exposure level pursuant to section 39662, the ATCM shall be designed to reduce emissions to the lowest level achievable through effective control method or an alternative.[83] A recent evaluation of the 2007 ATCM and the effectiveness of the regulation showed that there are less toxic alternatives available and improved technologies and operating practices that can be implemented to further reduce hexavalent chromium emissions from chrome plating operations in California. This is especially important given that many communities are impacted by emissions of hexavalent chromium from multiple chrome plating facilities in addition to other sources of hexavalent chromium and other toxic air contaminants. These cumulative impacts have been a long-standing concern of communities. The Proposed Amendments further reduce hexavalent chromium emissions from chrome plating operations to protect public health and

[82] *EPA Health Effect Support Document for PFOS*
[83] *Health and Safety Code §39666 (c)*

eliminate localized exposure to hexavalent chromium from chrome plating operations following the phase out.

In addition, in March 2021, the California State Water Resources Control Board (SWRCB or Water Boards) announced a proposed new maximum contaminant level (MCL) for hexavalent chromium that prioritizes protecting public health and achievable path to water treatment.[84] The proposed MCL for hexavalent chromium is 10 parts per billion (ppb), which represents a more health-protective level. Hexavalent chromium may occur in groundwater naturally or as a result of industrial sites (such chrome plating facilities) that cause releases or fail to follow the proper disposal methods for contaminated water. SWRCB staff estimated that a person who ingests hexavalent chromium in water at an MCL of 10 ppb daily for 70 years could have a one-in-2,000 chance of developing cancer. This new MCL is expected to go into effect in early 2024, if adopted by the Water Boards.

XII. Public Process for Development of the Proposed Actions (Pre-Regulatory Information)

Consistent with Government Code sections 11346, subdivision (b), and 11346.45, subdivision (a), and with the Board's long-standing practice, CARB staff held public workshops and had other meetings with interested persons during the development of the Proposed Amendments. These informal pre-rulemaking discussions provided staff with useful information that was considered during development of the regulation that is now being proposed for formal public comment.

CARB staff have engaged in an extensive public process since the development of the Proposed Amendments, which started in 2017/2018. On June 8, 2018, CARB staff issued a regulatory notice to inform the public of the beginning of the rulemaking process to amend the 2007 ATCM, and a factsheet was posted on Chrome Plating ATCM website. Staff initiated the process to collect information on facilities' operating practices, tank process information, grinding, polishing, housekeeping, chemical fume suppressants, and other facility information through a survey. As mentioned in Section I.(l), in support of AB 617, in October 2018 the Blueprint report stated that CARB would amend the 2007 ATCM in order to reduce impacts on communities impacted by stationary sources. As part of the rulemaking process, staff conducted meetings with members of impacted communities, environmental justice advocates, local air districts, industry stakeholders (including facilities owners and operators, chemical fume suppressants suppliers, equipment manufacturers (OEMs), trade associations, other U.S. state agencies, U.S. EPA, and other interested parties). Meeting formats included technical work group meetings, public workshops, community meetings, informal meetings, phone calls, and site visits.

[84] *State Water Resource Control Board Media Release March 21, 2022*

A. Technical Workgroup Meetings

CARB staff conducted seven technical workgroup meetings to solicit stakeholder feedback and discuss regulatory concepts, costs, technology alternatives, emission inventory estimates, health impacts from chrome plating facilities, compliance and sources testing results.

Staff held an initial virtual technical workgroup meeting on September 11, 2020. During this workgroup meeting, staff discussed the chronology of chrome plating regulations, results of the 2018 survey, ambient monitoring, CARB staff's health and risk analysis, and draft concepts to further reduce hexavalent chromium emissions from regulated and un-regulated tanks operated by chrome plating facilities. In addition, staff asked the interested parties to submit comments, feedback, and suggestions on additional ideas or concepts.

Staff conducted a second virtual technical workgroup meeting on December 17, 2020. During this workgroup meeting, staff discussed their findings on facility emissions inventory, including tanks that are not chrome plating tanks, highlighting a few existing practices facilities are using to comply with the ATCM requirements, and the role of alternative technology in reducing hexavalent chromium emissions.

Staff conducted a third virtual technical workgroup meeting on March 11, 2021. During this workgroup meeting, staff discussed the status of technology across the industry. Stakeholders presented information from a March 3, 2021, technical symposium held by National Association for Surface Finishing (NASF). This symposium included a slate of industry experts who presented the status of trivalent chromium technology and the current barriers and timelines for a broad application of trivalent chromium plating processes. In addition, CARB staff discussed the status of and initial cost estimates for trivalent chromium plating systems and initial concepts for the ATCM amendments. The workgroup included 110 participants representing the industry, industry's association, OEMs, environmental justice advocates, and community advocates. All participants were encouraged to submit oral questions and comments or written questions and comments in the chat.

Staff conducted a fourth virtual technical workgroup meeting on April 29, 2021. During this workgroup meeting, staff responded to previous meeting comments regarding the health benefits from the Proposed Amendments, the number of facilities that are near sensitive receptors, and presented an emissions inventory allocated by plating type. Also, staff presented the draft Proposed Amendments language (which included proposed requirements for each type of facility). The workgroup included 94 participants representing the industry, industry associations, local air districts, OEMs, environmental justice advocates, and community advocates. All participants were encouraged to submit oral questions and comments or written questions and comments in the chat.

Staff conducted a fifth virtual technical workgroup meeting on May 26, 2021. During this workgroup meeting, staff presented the language of the Proposed Amendments for existing, modified, and new facilities, and timeline revisions. The workgroup included 141 participants representing the industry, industry's association, local air districts, OEMs, and community advocates. All participants were encouraged to submit oral questions and comments or written questions and comments in the chat.

Staff conducted a sixth virtual technical workgroup meeting/public workshop on January 20, 2022. During this workgroup meeting, staff presented a summary of the previous meeting, the revised concepts regarding new hexavalent chromium plating operations, hexavalent chromium phase out timelines, the preliminary cost evaluation of the proposed amendments, the environmental analysis (as part of CEQA process), and the request for public input for CEQA and SRIA alternatives. The workshop included 104 participants representing the industry, industry associations, local air districts, OEMs, environmental justice advocates, and community advocates. All participants were encouraged to submit oral questions and comments or written questions and comments on chat.

Staff conducted a seventh virtual technical workgroup meeting on April 26, 2022. During this workgroup meeting, staff presented a summary of the previous meeting, the revised draft rule language, and hexavalent chromium phase out timelines. The workgroup included 114 participants representing the industry, industry associations, local air districts, OEMs, environmental justice advocates, and community advocates. All participants were encouraged to submit oral questions and comments or written questions and comments in the chat. In addition, staff asked the interested parties to submit comments, feedback, and suggestions on the SRIA and alternatives to the Proposed Amendments.

B. Public Workshops

CARB staff held the first virtual public workshop, which also served as the sixth technical working group meeting, via Zoom on January 20, 2022. This public workshop was required as part of the CEQA process. Staff notified stakeholders of this meeting/workshop by issuing a public notice four weeks prior to its occurrence, which was distributed through the Chrome Plating ATCM list server to over 3,400 recipients. Additionally, staff's presentation, CEQA Chrome Plating ATCM Notice of Preparation (NOP), and CEQA workshop notice documents were posted on the Chrome Plating ATCM website in advance of the workshop. During this workshop, staff discussed the revised concepts since the previous technical workgroup meeting and the status of current and near future feasible technology. Staff asked for public input on the alternatives to the Proposed Amendments. Staff also asked for public input on the appropriate scope and content of the environmental analysis (EA) (that is part of CEQA) including the reasonably foreseeable actions that may occur in response to the proposal, the potential significant adverse impacts, potential feasible mitigation measures, and feasible alternatives to the proposal that could reduce or eliminate any significant adverse impacts. The workshop included 104 participants, and all were encouraged to submit questions and comments orally or via Zoom's chat feature.

CARB staff held the second public workshop via Zoom on June 9, 2022. During this workshop, staff discussed regulatory concepts, the need for regulation, ATCM process to date, emissions inventory and health risk assessment findings, economic impacts, and the timeline for these amendments. The workshop included 107 participants representing the industry, industry associations, Districts, OEMs, environmental justice advocates, and community advocates. All participants had the ability to submit oral questions and comments or written questions and comments in the chat. Also, staff asked the interested parties to submit comments, feedback, and suggestions.

C. Other Meetings

Staff also held several meetings during the development of this regulatory proposal with industry stakeholders, OEMs, industry associations, and environmental justice community leaders to brief them on the Proposed Amendments and to receive feedback from each group.

D. Site Visits

CARB staff visited 29 chrome plating facilities during 2018 to 2022, located in the San Francisco Bay Area, Sacramento, San Joaquin, San Diego, and the Los Angeles area. Several CARB Board Members and Executive Office staff had the opportunity to attend a few of these site visits. CARB staff also conducted informational site visits to several facilities, including decorative chrome platers, functional chrome platers, and chromic acid anodizing platers to learn more about their chrome plating operations, better understand the potential implementation challenges associated with the Proposed Amendments, and better understand the impacts chrome plating facilities have on communities.

E. Informational Documents

Staff developed three informational documents that were made available to the public and posted on CARB's chrome plating webpage. In May 2021, staff posted the draft proposed regulatory language on the Chrome ATCM website for public comment. In January 2022, staff posted a preliminary cost document on the Chrome Plating ATCM website for public comments, which included the estimated cost inputs and assumptions to be used for the economic analysis of the Proposed Amendments. This document was released in advance of the Standardized Regulatory Impact Analysis (SRIA) for the Chrome Plating ATCM to engage all interested parties and to receive feedback and suggestions on the data and assumptions that would be used. In April 2022, staff posted the revised draft of the proposed regulatory language on the Chrome Plating ATCM website for public comment, to be discussed during the seventh technical work group meeting held on April 26, 2022.

XIII. References

[1] California Air Resources Board, Chrome Plating ATCM. https://ww2.arb.ca.gov/our-work/programs/chrome-plating-atcm.

[2] California Air Resources Board, CARB Identified Toxic Air Contaminants. https://ww2.arb.ca.gov/resources/documents/carb-identified-toxic-air-contaminants.

[3] California Air Resources Board, AB 1807 – Toxics Air Contaminant Identification and Control. https://ww2.arb.ca.gov/resources/documents/ab-1807-toxics-air-contaminant-identification-and-control.

[4] Office of Environmental Health Hazard Assessment/California Air Resources Board, Consolidated Table of OEHHA/CARB Approved Risk Assessment Health Values, Table 1. https://ww2.arb.ca.gov/sites/default/files/classic/toxics/healthval/contable.pdf.

[5] United States Environmental Protection Agency, Evaluation of the Inhalation Carcinogenicity of Ethylene Oxide, Executive Summary, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 2016. https://iris.epa.gov/static/pdfs/1025_summary.pdf.

[6] Assembly Bill 617, Garcia, C., Chapter 136, Statutes of 2017, modified the California Health and Safety Code, amending § 40920.6, § 42400, and § 42402, and adding § 39607.1, § 40920.8, § 42411, § 42705.5, and § 44391.2 dated July 26, 2017. *https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB617*.

[7] Office of Environmental Health Hazard Assessment, About CalEnviroScreen. https://oehha.ca.gov/calenviroscreen/about-calenviroscreen.

[8] Senate Bill 535, De Leon, K., Chapter 830, Statutes of 2012, added § 39711, § 39713, § 39715, § 39721, and § 39723 of the Government Code, dated February 2011. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201120120SB535.

[9] California Air Resources Board, Public Hearing to Consider the Proposed Amendments to the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate, Staff Report: Initial Statement of Reasons, July 27, 2021. https://ww2.arb.ca.gov/sites/default/files/barcu/board/rulemaking/tru2021/isor.pdf.

[10] California Air Resources Board, Public Hearing To Consider The Proposed Control Measure For Ocean-Going Vessels At Berth, Staff Report: Initial Statement of Reasons, October 15, 2019. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/ogvatberth2019/isor.pdf.

[11] National Institute of Environmental Health Sciences, Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS). https://www.niehs.nih.gov/health/topics/agents/pfc/index.cfm.

[12] California Air Resources Board, Proposed Amendments to the Hexavalent Chromium Airborne Toxic Control Measure for Chrome Plating and Chromic Acid Anodizing

Operations, Standardized Regulatory Impact Assessment (SRIA). https://dof.ca.gov/forecasting/economics/major-regulations/major-regulations-table/.

[13] Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program, Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments, February 2015. https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

[14] Office of Environmental Health Hazard Assessment/California Air Resources Board, Consolidated Table of OEHHA/CARB Approved Risk Assessment Health Values, Table 1. https://ww2.arb.ca.gov/sites/default/files/classic/toxics/healthval/contable.pdf.

[15] South Coast Air Quality Management District, Rule 1469. Hexavalent Chromium Emissions From Chromium Electroplating and Chromic Acid Anodizing Operations. http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1469.pdf.

[16] United States Environmental Protection Agency, 40 CFR, Part 63, Subpart CCC, National Emission Standards for Hazardous Air Pollutant Emissions: Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks and Steel Pickling – HCl Process Facilities and Hydrochloric Acid Regeneration Plants, Final Rules. https://www.govinfo.gov/content/pkg/FR-2012-09-19/pdf/2012-20642.pdf#page=1.

[17] United States Environmental Protection Agency, 40 CFR, Ch. I (7-1-15 Edition), Subpart N, National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks. https://www.govinfo.gov/content/pkg/CFR-2015-title40-vol10/pdf/CFR-2015-title40-vol10-part63-subpartN.pdf.

[18] South Coast Air Quality Management District, Rule 1469.1. Spraying Operations Using Coatings Containing Chromium. http://www.aqmd.gov/docs/default-source/rule-book/reg-xiv/rule-1469-1.pdf.

[19] California Health and Safety Code section 39655. https://codes.findlaw.com/ca/health-and-safety-code/hsc-sect-39655.html.

[20] California Air Resources Board, AB 2588 Air Toxics "Hot Spots". https://ww2.arb.ca.gov/our-work/programs/ab-2588-air-toxics-hot-spots.

[21] California Health and Safety Code sections 44300-44394. https://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=HSC&division=26.&title=&part=6.&chapter=&article=.

[22] California Air Resources Board, Senate Bill (SB) 1731, Risk Reduction Audits and Plans, General Guidance for Preparing Risk Reduction Plans. https://ww2.arb.ca.gov/sites/default/files/classic/ab2588/rrap-iwra/genguidl.pdf.

[23] California Health and Safety Code sections 44390-44394. https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=26.&title=&part=6.&chapter=6.&article=.

[24] California Air Resources Board, Final Community Air Protection Blueprint – October 19, 2018. https://ww2.arb.ca.gov/sites/default/files/2020-03/final_community_air_protection_blueprint_october_2018_acc.pdf.

[25] State Water Resources Control Board, State Water Resources Control Board, Board Meeting Session – Division of Water Quality, Item 5, April 5, 2022. https://www.waterboards.ca.gov/board_info/agendas/2022/apr/040522_5.pdf.

[26] United States Environmental Protection Agency, Health Effects Support Document for Perfluorooctane Sulfonate (PFOS). https://www.epa.gov/sites/default/files/2016-05/documents/pfos_hesd_final_508.pdf.

[27] South Coast Air Quality Management District, Source Test Report 16-333, Conducted at Anaplex Corporation, Hexavalent Chromium Emissions From Three Types of Process Tanks, December 9, 2016. http://www.aqmd.gov/docs/default-source/compliance/Carlton-Forge-Works/anaplex-16-333-test_2.pdf.

[28] California Air Resources Board, Annual Statewide Toxics Summary iADAM. https://www.arb.ca.gov/adam/toxics/statepages/cr6state.html.

[29] California Air Resources Board, Proposed Amendments to the Hexavalent Chromium Airborne Toxic Control Measure for Chrome Plating and Chromic Acid Anodizing Operations, Appendix G: Hexavalent Chromium Content Contained in Dust Samples Collected from Chromium Plating Shops in San Diego County, 2022. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/chrom06/cpappeng.pdf.

[30] United States Environmental Protection Agency, AP-42: Compilation of Air Emissions Factors. https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors.

[31] United States Environmental Protection Agency, AP-42: Compilation of Air Emissions Factors, Appendix B.2 Generalized Particle Size Distributions. https://www.epa.gov/sites/default/files/2020-11/documents/appb-2.pdf.

[32] South Coast Air Quality Management District, Report on Updated Air Monitoring in Paramount Community and Preliminary Assessment of Health Impacts. http://www.aqmd.gov/docs/default-source/compliance/Carlton-Forge-Works/report-amh-081016f.pdf.

[33] South Coast Air Quality Management District, MATES IV, Multiple Air Toxics Exposure Study. https://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-iv.

[34] South Coast Air Quality Management District, MATES V, Multiple Air Toxics Exposure Study in the South Coast AQMD, Final Report, August 2021. http://www.aqmd.gov/docs/default-source/planning/mates-v/mates-v-final-report-9-24-21.pdf.

[35] South Coast Air Quality Management District, Updated Air Monitoring Plan for Paramount. http://www.aqmd.gov/docs/default-source/compliance/Paramount/updated-monitoring-plan.pdf.

[36] South Coast Air Quality Management District, Summary of Efforts in Paramount, Significant Improvements Since October 2016, December, 2017. http://www.aqmd.gov/docs/default-source/compliance/Paramount/summary-of-efforts-in-paramount.pdf?sfvrsn=8.

[37] Yacovitch, T.I., Herndon, S.C., Fortner, E., Daube, C., Roscioli, R., Knighton, W.B., Khystov, A., Campbell, D., Final Report Application of Next Generation Air Monitoring Methods in the South Coast Air Basin. https://www.aqmd.gov/docs/default-source/compliance/Paramount/mobile-monitoring.pdf?sfvrsn=8.

[38] County of Los Angeles Public Health, Hexavalent Chromium in the City of Paramount. http://www.publichealth.lacounty.gov/eh/chromium6/paramount.htm.

[39] South Coast Air Quality Management District, Paramount Emissions Investigation – Summary of Efforts, April 2021. http://www.aqmd.gov/docs/default-source/compliance/Paramount/efforts-april2021.pdf?sfvrsn=6.

[40] California Air Resources Board, Air Monitoring Results for Hexavalent Chromium and Other Metals Around Chrome Plating and Chromic Acid Anodizing Operations (Facility 1), February 4, 2020. Air Monitoring for Hex chrome near chrome plating facilities - Facility 1 - Final – Signed.pdf.

[41] California Air Resources Board, Air Monitoring Results for Hexavalent Chromium and Other Metals Around Chrome Plating and Chromic Acid Anodizing Operations (AAA Plating), September 17, 2020. Air Monitoring for Hex chrome near chrome plating facilities - AAA Plating.pdf.

[42] United States Environmental Protection Agency, PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024. https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf.

[43] Department of Toxic Substances Control, Safer Products, Priority Products. https://dtsc.ca.gov/scp/priority-products/.

[44] Department of Toxic Substances Control, Safer Products, Safer Consumer Products. https://dtsc.ca.gov/scp/.

[45] United States Environmental Protection Agency, Title 40, Chapter I, Subchapter C, Part 51, Appendix M, Method 204 – Criteria for and Verification of a Permanent or Temporary Total Enclosure (January 14, 2019). https://www.epa.gov/sites/default/files/2019-06/documents/method_204_0.pdf.

[46] California Air Resources Board, The Identification of Federal Hazardous Air Pollutants as Toxic Air Contaminants, Appendix 1 Assembly Bill 2728. https://ww2.arb.ca.gov/sites/default/files/classic//toxics/id/hapstacs.pdf.

[47] Office of Environmental Health Hazard Assessment, Chromium, Trivalent Inorganic Water-Soluble Compounds) Reference Exposure Levels. https://oehha.ca.gov/media/downloads/air/document/criiireldraft040821.pdf.

[48] Martinez-Viademonte, M.P., Abrahami, S.T., Hack, T., Burchardt, M., and Terryn, H. A., Review on Anodizing of Aerospace Aluminum Alloys for Corrosion Protection, Coatings 2020, 10, 1106; doi:10.3390/coatings10111106. https://mdpi-res.com/d_attachment/coatings/coatings-10-01106/article_deploy/coatings-10-01106-v2.pdf.

[49] European Commission, Environment, Chemicals, REACH. https://ec.europa.eu/environment/chemicals/reach/reach_en.htm.

[50] Trion Coatings, LLC, SAFE Chrome for CARB Chromium Plating Symposium, March 3, 2021, National Association for Surface Finishing. Trion Coating LLC-CARB Chromium Plating Symposium March 3-2021.pdf

[51] Division of Occupational Safety and Health (CalOSHA). https://www.dir.ca.gov/dosh/.

[52] Department of Industrial Relations, Subchapter 7. General Industry Safety Orders, Group 16. Control of Hazardous Substances, Article 107. Dusts, Fumes, Mists, Vapors and Gases, § 5155. Airborne Contaminants. https://www.dir.ca.gov/title8/5155.html.

[53] California Air Resources Board, District Resources for Emission Inventory – Database References. https://www.arb.ca.gov/ei/drei/maintain/database.htm.

[54] California Air Resources Board, "Hot Spots" Inventory Guidelines. https://ww2.arb.ca.gov/our-work/programs/ab-2588-air-toxics-hot-spots/hot-spots-inventory-guidelines.

[55] California Air Resources Board, CTR Regulation. https://ww2.arb.ca.gov/our-work/programs/criteria-and-toxics-reporting/ctr-regulation.

[56] Office of Environmental Health Hazard Assessment/California Air Resources Board, Consolidated Table of OEHHA/CARB Approved Risk Assessment Health Values. https://ww2.arb.ca.gov/resources/documents/consolidated-table-oehha-carb-approved-risk-assessment-health-values.

[57] California Air Resources Board, Speciation Profiles Used in CARB Modeling. https://ww2.arb.ca.gov/speciation-profiles-used-carb-modeling.

[58] Nocon, K., Rogula-Kozlowska, W., Widziewicz, K., Research on Chromium and Arsenic Speciation in Atmospheric Particulate Matter, E3S Web of Conferences 28, 01026 (2018), Air Protection in Theory and Practice. https://doi.org/10.1051/e3sconf/20182801026.

[59] Kang, B., Lee, H., Kim, J., Hong, J., Kim, R., Seo, Y., Han, J., Back, K., Kim, M., and Back, S., Distribution of Airborne Hexavalent Chromium Concentrations in Large Industrial Complexes in Korea, Asian Journal of Atmospheric Environment, Vol. 10-4, pp. 208-216, December 2016. https://doi.org/10.5572/ajae.2016.10.4.208.

[60] Linak, W., Raleigh, N.C., and Wendt, J.O.L., Minimizing Emission of Hexavalent Chromium From Combustion Sources, United States Patent, Patent Number: 5,972,301. https://patents.google.com/patent/US5972301A/en.

[61] California Air Resources Board, MSEI – Modeling Tools – EMFAC Software and Technical Support Documentation. https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools-emfac-software-and.

[62] California Air Resources Board, CEPAM2019v1.03 Standard Emission Tool. https://ww2.arb.ca.gov/applications/cepam2019v103-standard-emission-tool.

[63] United States Environmental Protection Agency, Chromium Electroplating: National Emission Standards for Hazardous Air Pollutants. https://www.epa.gov/stationary-sources-air-pollution/chromium-electroplating-national-emission-standards-hazardous-air.

[64] South Coast Air Quality Management District, Paramount Hexavalent Chromium Monitoring Results. http://www.aqmd.gov/docs/default-source/compliance/Paramount/expanded-monitoring-data-and-map.pdf.

[65] California Air Resources Board, Technical Support Document to Propose ATCM for Emissions of Hexavalent Chromium from Chrome Plating and Acid Anodizing Operations, January 1988. Report_ 1988-01-04 Proposed Airborne Toxic Control Measure (ATCM) for Emissions of Hexavalent Chromium.pdf

[66] California Air Resources Board, Proposed Amendments to the Hexavalent Chromium Control Measure for Decorative and Hard Chrome Plating and Chromic Acid Anodizing Facilities, Staff Report, April 1998. Hexavalent Chromium ISOR 1998.pdf

[67] California Air Resources Board, Proposed Amendments to the Hexavalent Chromium Airborne Toxic Control Measure for Chrome Plating and Chromic Acid Anodizing Operations, August 11, 2006. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/chrom06/cpisor.pdf.

[68] Association of Environmental Professionals, 2021 CEQA, California Environmental Quality Act, Statute & Guidelines. https://www.califaep.org/docs/CEQA_Handbook_2021.pdf.

[69] California Air Resources Board, Policies and Actions for Environmental Justice. https://ww3.arb.ca.gov/ch/programs/ej/ejpolicies.pdf.

[70] REMI, Models, PI^{+}. https://www.remi.com/model/pi/.

[71] Senate Bill 617, Calderon, R., Chapter 496, Statutes of 2011, amended § 13401, § 13402, § 13403, § 13404, § 13405, § 13406, and § 13407 of the Government Code, dated February 2011. https://legiscan.com/CA/text/SB617/id/333938.

[72] California Department of Finance, Division 3-Department of Finance, Chapter 1. Standardized Regulatory Impact Assessment For Major Regulations, Order of

Adoption. https://dof.ca.gov/wp-content/uploads/Forecasting/Economics/Documents/Order_of_Adoption-12012013.pdf.

[73] California Department of Finance, Economic Research Unit, National Economic Forecast – Annual & Quarterly, Sacramento: California, April 2022. United States-Economic-Forecast-MR-2022-23.xlsx.

[74] California Department of Finance, Economic Research Unit, California Economic Forecast – Annual & Quarterly, Sacramento: California, April 2022. California-Economic-Forecast-MR-2022-23.xlsx.

[75] California Department of Finance, Economic Research Unit, National Deflators: Calendar Year Averages: from 1929, April 2021, Sacramento: California, May 2022. Implicit-Price-Deflators-CY.xlsx.

[76] California Department of Finance, Demographic Research Unit, Report P-3: Population Projections, California, 2010-2060 (Baseline 2019 Population Projections; Vintage 2020 Release), Sacramento: California, July 2021. Report P-3 Population Projections.xlsx.

[77] California Air Resources Board, Conversion Cost – Dec to Tri.pdf.

[78] Bizminer, Industry Financial Profile, [332813] Electroplating, Plating, Polishing, Anodizing & Coloring. Bizminer Industry Financial Profile.pdf.

[79] California Franchise Tax Board, Business Tax Rates. FTB Business tax rates.pdf.

[80] California Government Code, Title 2., Division 3., Part 1., Chapter 3.5., Article 5. Public Participation: Procedure for Adoption of Regulations, Section 11346.2. https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV&sectionNum=11346.2.

[81] California Health and Safety Code, Division 37. Regulation of Environmental Protection, Section 57005. https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=57005.

[82] United States Environmental Protection Agency, Health Effects Support Document for Perfluorooctane Sulfonate (PFOS). https://www.epa.gov/sites/default/files/2016-05/documents/pfos_hesd_final_508.pdf.

[83] California Health and Safety Code, section 39666(c) – Airborne Toxic Control Measures. https://casetext.com/statute/california-codes/california-health-and-safety-code/division-26-air-resources/part-2-state-air-resources-board/chapter-35-toxic-air-contaminants/article-4-control-of-toxic-air-contaminants/section-39666-airborne-toxic-control-measures.

[84] State Water Resources Control Board, Proposed Standard for Hexavalent Chromium Prioritizes Public Health, Achievable Path to Water Treatment, March 21, 2022. https://www.waterboards.ca.gov/press_room/press_releases/2022/pr03212022-hexavalent-chromium.pdf

XIV. Appendices

Appendix A: Proposed Regulation Order

Appendix B: Emission Inventory Data

Appendix C-1: Standardized Regulatory Impact Assessment (SRIA)

Appendix C-2: DOF Comments to the Chrome Plating ATCM and CARB Responses

Appendix D: Draft Environmental Analysis

Appendix E: List of Public Workshops, Technical Work Group Meetings, Conference Calls, Video Conferences, and Site Visits Supporting the Public Process for Development of the Proposed Amendments (Pre-Regulatory Information)

Appendix F: Health Risk Assessment (HRA)