

Appendix C-2

DOF Comments to the Chrome Plating ATCM and CARB Responses

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

Date of Hearing: January 26, 2023

Summary and Response to Department of Finance Comments on the Standardized Regulatory Impact Assessment

DOF Comment #1:

[T]he SRIA does not expect any business closures in response to the proposed regulations, nor does it discuss any potential competitive disadvantages to California's chrome facilities, despite acknowledging stakeholder concerns regarding the availability of alternatives. However, unavailable or inferior alternatives may reduce the demand for in-state chrome services and instead incentivize consumers to switch to out-of-state businesses who would still be able to utilize hexavalent chromium processes. The SRIA must include a comprehensive assessment of the potential business and employment impacts, including a discussion of these potential behavioral responses to the proposed regulation, or further justify why it is reasonable to assume these adverse impacts would be unlikely to occur.

Staff Response:

CARB staff (staff) would like to clarify that the Standardized Regulatory Impact Assessment (SRIA) does explain that there may be business closures in response to the Proposed Amendments. Department of Finance's (DOF) comment stating that the SRIA does not expect any business closures may be referring to page 62 of the SRIA, where staff indicate that, "the direct costs of the Proposed Amendments themselves would not be anticipated to result in significant changes in business elimination in California. The overall job and output growth impacts are small relative to the California economy, about 0.01 percent in the years of greatest impact." This section of the SRIA refers to impacts to the entire California economy, and the scenario that is analyzed assumes that trivalent chromium is a viable alternative to hexavalent chromium plating and anticipated to be available for both decorative and functional applications by the applicable phase out dates. Other scenarios were also analyzed, as discussed below.

The SRIA acknowledges on page 66 that chrome plating "facilities may choose to leave California because of increased costs." Although the Proposed Amendments do not directly require business closures, business closures are one of the potential impacts. The degree to which there will be business closures is determined by production cost increases to chrome plating facilities, consumer acceptance of trivalent chromium plated products as an alternative to hexavalent chromium plated products, and the time it takes to develop other alternatives to hexavalent chromium plating.

Consumer responses to the Proposed Amendments may be different for decorative and functional chrome plating. While trivalent chromium is a commercially-available alternative to hexavalent chromium for decorative chrome plating, customers may choose out-of-state chrome platers due to aesthetics. Some stakeholders have raised concerns that the color deposited by hexavalent chromium does not precisely match the color deposited by trivalent

chromium and that consumers may not accept products plated with trivalent chromium. This could result in a decrease in demand for products that are chrome plated in California following the 2027 phase out of hexavalent chromium in decorative chrome plating. Decorative platers in California will have to choose whether to invest in replacement technology, send parts out of state to be plated, move out-of-state, or shut down completely.

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. Therefore, two technology reviews that are three and seven years preceding the 2039 phase out date have been added to the Proposed Amendments. Through these technology reviews, CARB will evaluate the status of alternative technologies, including technological and product feasibility limitations, prior to the phase out of hexavalent chromium in functional chrome plating. If the technology reviews show that there is no available alternative technology, the ATCM can be amended by adjusting the dates or the specific requirements of the phase out accordingly.

Staff analyzed four separate scenarios to illustrate the potential business and employment impacts of the Proposed Amendments. One of these scenarios assumes that trivalent chromium is a viable alternative to hexavalent chromium plating and will be available for both decorative and functional applications by the applicable phase out dates. The other three are intended to capture impacts of potential scenarios that could result from a decrease in demand if consumers do not accept trivalent chromium plated products or the available alternative technology for functional chrome plating is not available.

Staff explored several methods to model the decrease in chrome plating in California, including decreasing final demand for the chrome plating industry and directly reducing output (the amount of production) in the chrome plating industry. In the SRIA, staff chose to model the decrease in chrome plating in California as a decrease in final demand, as opposed to directly reducing output, because this resulted in the largest impacts to the overall economy and to the chrome plating industry and therefore better illustrates the potential range of impacts.

These impacts are the motivation behind the sensitivity analysis presented in Section 5.3.6 of the SRIA, where staff considered the impacts under potential scenarios where the Proposed Amendments would be associated with a 25, 50, and 75 percent decrease in final demand for California's chrome plating industry. This approach was taken due to the lack of specific data quantifying the reduction in demand or the amount of business closures that could result from the Proposed Amendments. Staff requested data regarding changes in demand and potential closures at numerous working group meetings, workshops, and one-on-one meetings with industry. While there is no threshold of cost increases or changes in final demand that can be used to determine business closures, the results of the SRIA can be used

to estimate the potential for business closures by applying the estimated percentage changes in employment to the estimated number of chrome plating facilities.

The sensitivity analysis captures potential impacts to both decorative and functional chrome plating facilities in the scenarios where demand decreases 25, 50, and 75 percent. For example, staff evaluated a scenario where the 2026¹ phase out of hexavalent chromium in decorative chrome plating results in a 25 percent decrease in final demand, which would be a decrease of \$34 million (25 percent of the estimated sales of all decorative plating facilities) from 2026 through 2037. Additionally, to capture the impact of the 2039 phase out of hexavalent chromium in functional chrome plating, in addition to the decrease that resulted from the 2026¹ phase out for decorative chrome plating, staff evaluated a further decrease of \$307 million (25 percent of the estimated sales of all chrome plating facilities including decorative and hard chrome plating and chromic acid anodizing) from 2038 through 2043 (See Table 5.7 of the SRIA).

Table 1 summarizes the impacts to the chrome plating industry under the various scenarios analyzed in the SRIA.² The “Estimated Employment Loss” column reports the maximum estimated decrease in employment within the chrome plating industry for decorative and functional facilities. For decorative facilities, the value is based on changes in employment between 2024 through 2037, when most costs are borne by decorative facilities (due to the 2026¹ phase out). The employment loss estimate for functional facilities is estimated by taking the maximum value of employment loss in the chrome plating industry from 2038 through 2043 (due to the 2039 phase out) and subtracting job decreases attributed to the decorative facilities.³ The “Percent Change in Employment” column provides a comparison between the “Estimated Employment Loss” column and the estimated employment within the chrome plating industry (see Table 5.7 of the SRIA). The “Estimated Facility Closures” column applies the “Percent Change in Employment” to the estimated number of facilities in the chrome plating industry (see Table 5.7 of the SRIA). For example, staff estimate that if there was an additional 75 percent decrease in final demand for chrome plating, this could be associated with a decrease of 359 decorative chrome plating jobs and 2,836 functional chrome plating jobs. These decreases in employment would represent a 41 percent decrease in employment at all decorative chrome plating facilities and a 76 percent decrease in employment at functional chrome plating facilities. If the decreases in employment were

¹ When the SRIA was conducted, it was based on a 2026 phase out. However, the phasing out for decorative chrome plating has since been changed to 2027 which will push back the impacts an additional year.

² Note that Table 5.14 in the SRIA has been corrected. Please see Table IX.3 in the ISOR.

³ In the main scenario, larger negative impacts begin in 2039 due to the phase out of hexavalent chromium in functional plating. In the sensitivity analysis, the larger negative impacts begin starting in 2038. This is because in 2038, there are positive impacts to employment and output due to increased final demand for trivalent chrome plating equipment and installation that counterbalance the increased costs to the chrome plating industry. In the sensitivity analysis, the negative impact of decreased final demand in the chrome plating industry outweighs these positive impacts that occur in 2038. As described in the SRIA, staff made a conservative assumption that chrome plating facilities made the same levels of investment to convert to trivalent chromium to comply with the Proposed Amendments in the main scenario and sensitivity scenarios.

matched by similar percentages of facility closures, this would be associated with the closure of 21 decorative chrome plating facilities and 47 functional chrome plating facilities.

Table 1. Estimated employment loss and facility closures to chrome plating facilities

Facility Type	Scenario	Estimated Employment Loss	Percent Change in Employment	Estimated Facility Closures
Decorative	No additional decrease in final demand	7	1%	<1
Decorative	25% decrease in final demand	122	14%	7
Decorative	50% decrease in final demand	240	27%	14
Decorative	75% decrease in final demand	359	41%	21
Functional	No additional decrease in final demand	193	5%	3
Functional	25% decrease in final demand	1,053	28%	18
Functional	50% decrease in final demand	1,938	52%	32
Functional	75% decrease in final demand	2,836	76%	47

Staff would also like to note that the SRIA discloses the competitive disadvantage to California chrome platers relative to out-of-state facilities due to increased costs (Section 5.3.8, Competitive Advantage or Disadvantage). Staff acknowledges that there could be competitive disadvantages relative to out-of-state facilities, which will still be able to utilize hexavalent chromium. For both decorative and functional facilities, there could be a competitive disadvantage because prices may increase if California chrome platers pass on the cost of converting to trivalent chromium to consumers. Out-of-state facilities that did not incur the costs to transition to alternative technology may be able to offer lower prices to consumers, which would cause a competitive disadvantage for California chrome platers. In addition, for decorative chrome plating facilities, the color difference between hexavalent and trivalent chrome plated parts may cause competitive disadvantage for California decorative chrome platers if customers prefer the color of hexavalent chrome plated parts.

Some commenters have expressed concerns that, due to the forward-looking nature of contracts for chrome plating services (which some industry representatives have claimed can span years to a decade), customers may not wait for the results of the technology review(s) before securing contracts with out-of-state facilities. The lack of certainty that California facilities will be able to perform hard chrome plating or chromic acid anodizing using hexavalent chromium may pose a competitive disadvantage to California facilities before

hexavalent chromium is phased out. It is not possible to quantify the impacts due to the speculative nature of this issue and due to lack of data regarding the timing and number of contracts that could be impacted and the uncertainty regarding the potential customer responses to the Proposed Amendments.

DOF Comment #2:

[T]he SRIA does not clearly disclose how inflation is incorporated into the analysis, however, costs may be different under higher assumed inflation rates. The brief qualitative discussion of the implications of higher inflation that is currently included in the SRIA should be expanded to clearly illustrate how costs are impacted by incorporating DOF's most recent inflation projections at the time of the analysis, as required.

Staff Response:

For the purposes of comparison in the SRIA, all costs and benefits are reported in constant 2021 dollars (SRIA at page 16). Cost and benefit values are converted to 2021 dollars, when necessary, using the annual values for California CPI-U published by the Department Industrial Relations, Office of the Director.⁴ This was used to convert the following costs described in the SRIA:

- The decorative chrome plating replacement cost and the non-electrical operating cost in decorative and functional facilities are converted from 2020 dollar to 2021 dollar using CPI-U.
- The costs for building enclosures, best management practices, and housekeeping upgrades were converted from 2018 dollars to 2021 dollars.

DOF's Consumer forecasts of CPI-U, released with the 2022-23 May Revision to the Governor's Budget, estimates that the prices of goods and services purchased by urban consumers rose by 6.98 percent from 2021 to 2022 and will continue to rise by approximately 3 percent per year from 2022 through 2025.⁵ If the SRIA were to present costs in constant 2022 dollars using DOF's forecasted values of CPI-U, the cost of the Proposed Amendments would be \$664.6 million 2022 dollars before tax and amortization compared with \$640.2 million 2021 dollars before tax and amortization.

Inflation is also incorporated into the analysis through adjusting the REMI Model's National Control (model baseline) with DOF's forecasts of the national Personal Consumption Expenditures Index. The PCE-Price Index reflects the price level of a region. It is used to deflate nominal personal income to real personal income. The SRIA uses the forecast of National Deflators published with the 2022-23 Governor's Budget, which was the most

⁴ California Department of Industrial Relations, Office of the Director, California Consumer Price Index, California Consumer Price Index Chart. Accessed June 28, 2022.

⁵ California Department of Finance, Consumer Price Index, Calendar Year averages: from 1950, May 2022.

recent data at the time of the analysis.⁶ Since the completion of the analysis, DOF has published newer forecasts with the 2022-23 May Revision to the Governor's Budget. Staff has updated the REMI National control to account for the higher levels of inflation than what was assumed previously. In addition, staff have updated the REMI model National and Regional controls to incorporate DOF's latest forecasts for U.S. Real Gross Domestic Product, income, and employment, as well as California civilian employment by industry, updated with the 2022-23 May Revision to the Governor's Budget.

⁶ California Department of Finance. Economic Research Unit. National Deflators: Calendar Year averages: from 1929, April 2021. Sacramento: California. January 2022.