



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

May 25, 2023

Support Health and Air Quality Goals and Commitments

Reduce community health impacts through AB 617

Follows Health and Safety Code mandate to reduce emissions to lowest achievable level

Board Resolution 20-25 on California Air Toxics Program Updates directed staff to expeditiously transition away from hexavalent chromium

California Legislature supported transition away from using hexavalent chromium in chrome plating by including funding in proposed budget

Chrome Plating

- Chromium Electroplating
 - Deposits a layer of chromium metal onto the surface of a part
 - Decorative or hard plating
- Chromic Acid Anodizing
 - Creates an oxide layer on the surface of an aluminum part
- 117 facilities in California



Decorative Chrome Plating

- Short plating times (seconds to minutes)
- Thin layer of chromium
- For aesthetics and wear resistance
- Used for furniture, car/motorcycle parts, faucets, etc.
- Primarily uses hexavalent chromium



Hard Chrome Plating

- Longer plating times (hours)
- Thicker layer of chromium
- Physical performance of primary concern
- Aerospace parts, hydraulic equipment, steel rollers, and other high-stress parts
- Currently uses hexavalent chromium



Chromic Acid Anodizing

- Different electrolytic process that uses hexavalent chromium
- Creates oxide layer on aluminum instead of depositing chromium
- Anodizing times around an hour
- High-stress aerospace applications



Why Amend This Regulation

- Chrome plating facilities emit highly toxic hexavalent chromium
 - No known safe level of exposure
 - 2nd most potent known carcinogen identified by the Board
 - Approximately 500 times more carcinogenic than diesel PM
 - Low concentrations lead to high potential risk

Why Amend This Regulation

- Facilities located close to residences and schools
- Builds upon work to address cumulative impacts in communities
- AB 617 Community Air Protection Blueprint
- Fugitive emissions of hexavalent chromium are a concern
- Less toxic alternatives exists

Cumulative Impacts

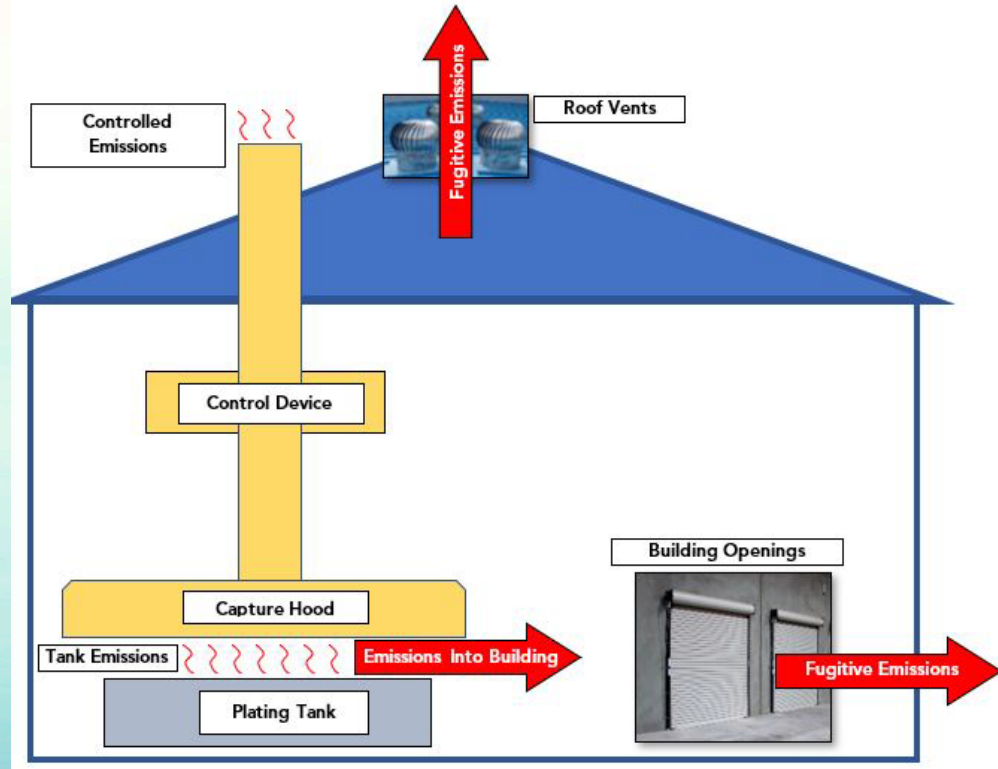


Baseline Cancer Risk vs. Other Control Measures

ATCM	Pollutant	Baseline Residential Cancer Risk (chances per million)
Chrome Electroplating and Chromic Acid Anodizing (2023)	Hexavalent Chromium	9 – 213*
Transport Refrigeration Units (2022)	Diesel Particulate Matter	510 – 1460
Ocean-Going Vessels At Berth (2020)	Diesel Particulate Matter	14 – 54
Perchloroethylene from Dry Cleaning Operations (2007)	Perchloroethylene	99 – 196
Hexavalent Chromium and Nickel from Thermal Spraying (2004)	Hexavalent Chromium and Nickel	230 – 690
Chlorinated Toxic Air Contaminants from Automotive Maintenance and Repair Activities (2000)	Perchloroethylene, methylene chloride, and trichloroethylene	158 – 280

Fugitive Emissions

- Emissions that escape through building openings, not through controls
- Estimated risk ranges from 1 to over 1,000 chances per million



Trivalent Chromium is a Less Toxic Alternative

- Not a carcinogen
- Primarily used in decorative chrome plating
 - Slight color difference
- Currently in use at California chrome plating facilities
- In development for other applications
- Does not use PFAS-containing fume suppressants

Board Direction

- Provide alternative phase out pathway for decorative platers
 - More time to transition to cleaner alternatives
 - Includes additional emission control requirements
- No changes for hard chrome plating or chromic acid anodizing facilities
- Clarify applicability of Proposed Amendments to medical tools and devices

15-Day Changes

- Responded to Board direction
- Released for public comment March 27, 2023, and April 26, 2023
- Alternative phase out pathway for decorative plating
 - January 1, 2030, phase out of hex chrome in decorative plating
 - 1-year extension still applicable
 - January 1, 2026, interim building enclosures requirements similar to South Coast Rule 1469
- Corrected emission inventory in Appendix B

Medical Tools and Devices

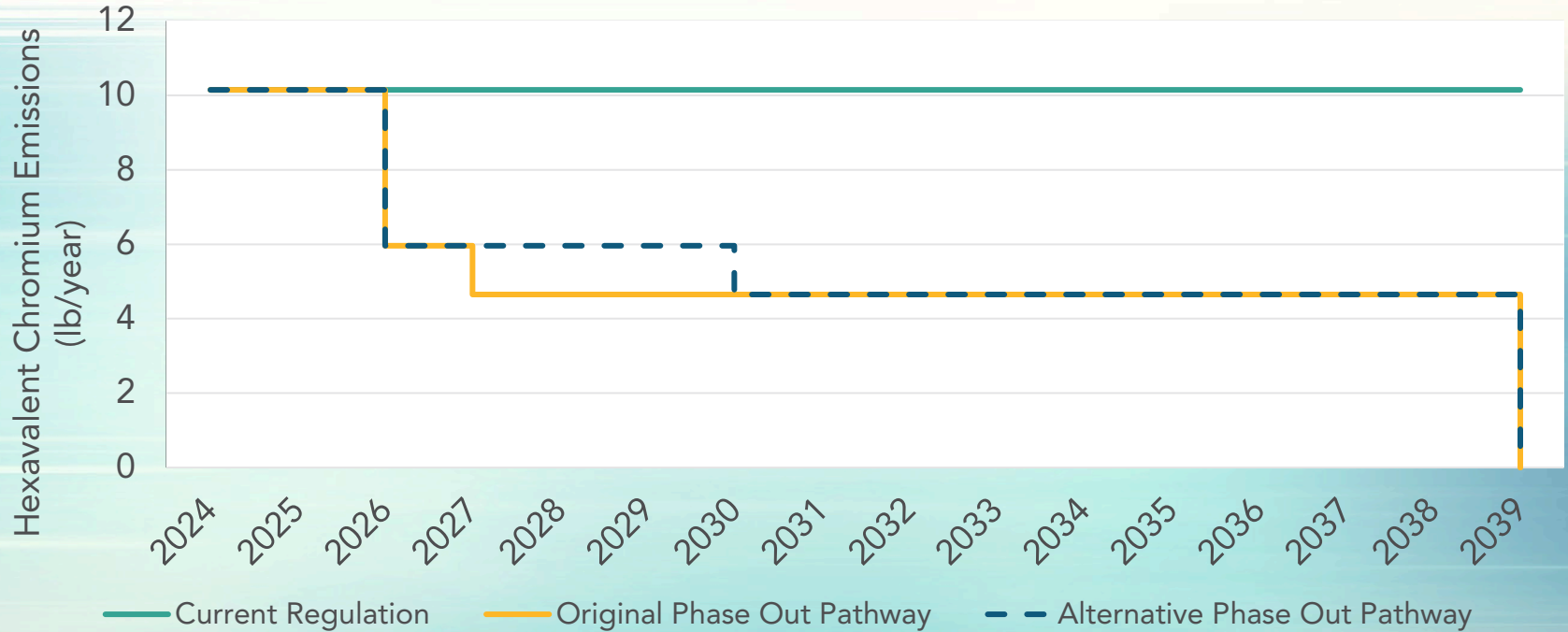
- Industry commented regarding the impact of the Proposed Amendments on the availability of medical tools and devices plated with hexavalent chromium
- The chrome coating on medical tools and devices is for the purposes of functional properties to the surface rather than a decorative finish
- No changes to the Proposed Amendments are needed
- Note: Many medical tools and devices are made of stainless steel or titanium, rather than hexavalent chromium plated metal

Updated Hexavalent Chromium Emission Inventory

Facility Type	Number of Facilities	Estimated Emission: Permitted Levels (lb/year)	Estimated Emissions ATCM limits and Reported Throughput (lb/year)	Estimated Emissions Reported Throughput and Limited Test Data (lb/year)
Decorative Chrome Plating	51	1.31	0.21	0.093
Hard Chrome Plating	36	8.64	2.47	0.96
Chromic Acid Anodizing	26	0.20	0.02	<0.01
All	113	10.15	2.7	1.05

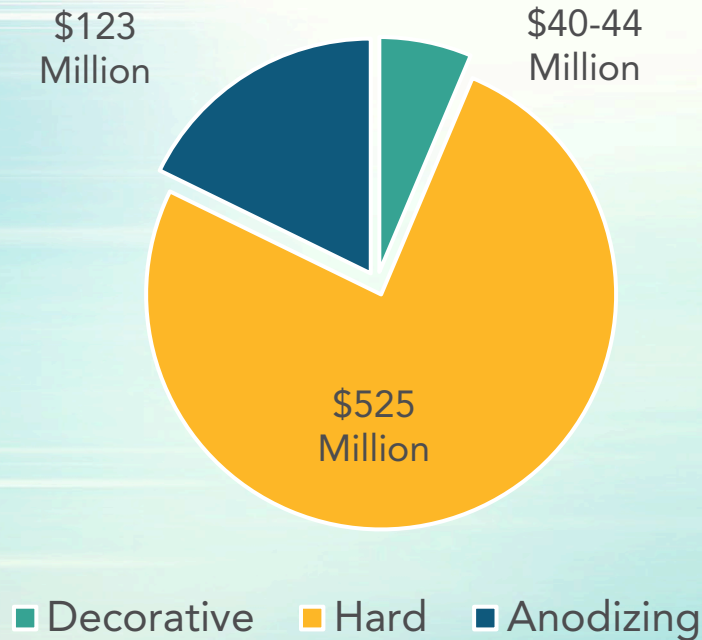
* Does not include fugitive emissions

Emission Reductions After 15-Day Changes



* Does not include fugitive emissions

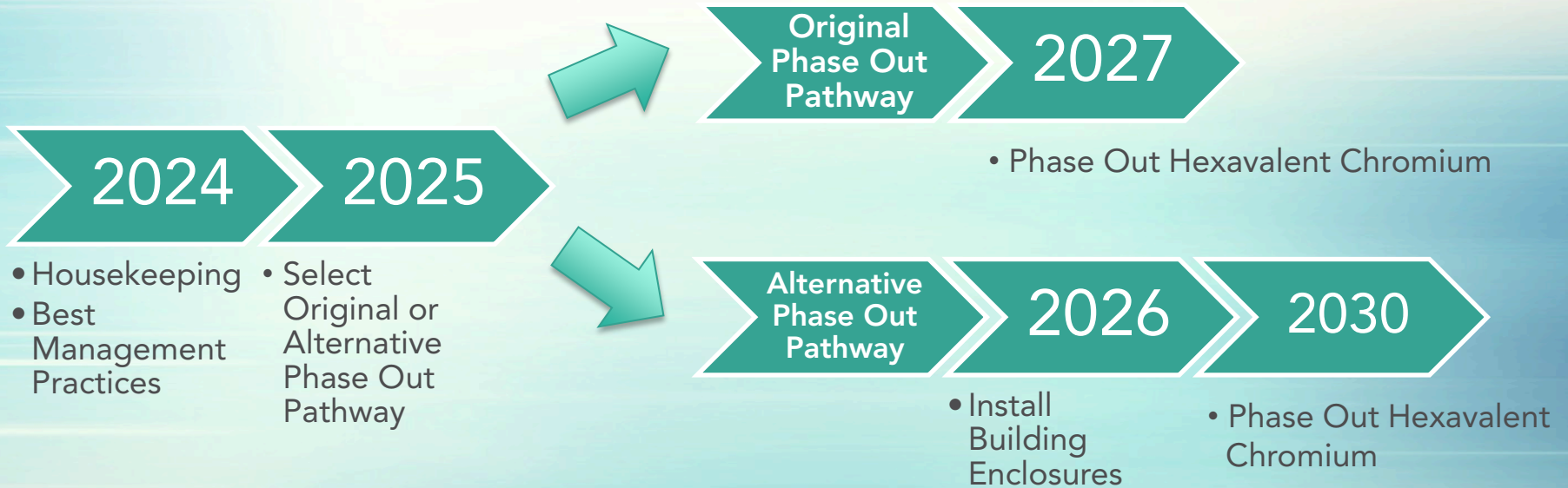
Total Costs of Proposed Amendments After 15-Day Changes



Decorative Plating

- \$40-44 Million depending on decorative phase out pathway
- Building enclosure cost estimated at up to \$17,000

Proposed Amendments Decorative Plating



Proposed Amendments

Hard Chrome Plating & Chromic Acid Anodizing



- Housekeeping
- Best Management Practices

- Install Building Enclosures
- Tier Tank Controls
- 0.00075 Emission Limit
- Biennial Source Testing Begins

- First Technology Review Completed

- Second Technology Review Completed

- Phase Out Hexavalent Chromium

Environmental Analysis

- Draft Environmental Analysis (EA) completed
 - Beneficial and potentially significant impacts found for some resource areas
 - Comment Period: Dec. 2, 2022 – Jan. 17, 2023
- CARB prepared the Final EA and written responses to comments received on the Draft EA
 - Released May 19, 2023

Summary of Comments (45-Day and January Board Hearing)

Summary of Community Comments

- Support phase out with accelerated timeline and suggestions for greater stringency
- Transition to trivalent chromium is important
- Concerns about chrome plating emissions and community health

Summary of Comments (45-Day and January Board Hearing)

Summary of Industry Comments

- Trivalent chromium suitability and acceptance
- Emissions are low and do not endanger communities
- Implement South Coast AQMD Rule 1469 statewide
- Facilities will leave the state or shut down
- Job losses
- Result may lead to emissions of hexavalent chromium in communities outside of California

Summary of 1st and 2nd 15-Day Comments

- Industry comments similar to comments made during the 45-day and January 2023 Board hearing
 - Revisions to analyses and to recirculate rulemaking documents
 - Technology reviews for decorative chrome plating
 - Further amendments to emissions inventory

Incentive Funding

- AB 211 - \$10 Million in legislative funding
 - Intent language established in AB 211 to assist with the **necessary transition** away from the use of hexavalent chromium
 - Included in proposed California budget
- AB 617 - Community Air Protection funding
- Prioritize funding to facilities transitioning by 2027

Recommendation to Adopt Board Resolution 23-16

- Direct staff to:
 - Work with districts on implementation and enforcement
 - Explore opportunities to continue air monitoring efforts for hexavalent chromium
- Certify the Final EA, including the written responses to comments on the EA, and make the required CEQA findings of overriding considerations
- Adopt the Proposed Amendments including 15-day changes