

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

## **Preliminary Draft Staff Report Proposed Amended Rule 1469.1 – Spraying Operations Using Coatings Containing Chromium**

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**CHAPTER 1 – BACKGROUND**

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## INTRODUCTION

Rule 1469.1 is designed to reduce hexavalent chromium emissions from the spraying of coatings that contain hexavalent chromium, referred to as “chromate coatings.” Chromate coatings typically are applied onto metal substrates as an anti-corrosion agent in the aerospace, military, and commercial industries. Proposed Amended Rule 1469.1 (PAR 1469.1) is designed to further reduce hexavalent chromium emissions from the spraying of chromate coatings. PAR 1469.1 expands the applicability to other activities associated with chromate spraying operations, adds provisions to minimize the release of fugitive emissions, and enhances parameter monitoring of air pollution controls. PAR 1469.1 also updates requirements consistent with current toxic metal rules and removes outdated definitions and provisions.

## REGULATORY HISTORY OF RULE 1469.1

Rule 1469.1 was adopted on March 4, 2005, and includes requirements for point sources, transfer efficiency, spray booth operation, housekeeping, monitoring, reporting, and recordkeeping.

### Point Source Compliance Options

Rule 1469.1 provides operators with three point source compliance options: Option A: Annual Emission Limit; Option B: Air Pollution Control Device; or Option C: Facility-wide Risk Limit. The rule established a July 1, 2007 compliance date for point source requirements. Option A (Annual Emission Limit) is applicable to facilities where the only source of hexavalent chromium is chromate spraying. Under this option, the facility must demonstrate that annual emissions are below a specific emission limit. The emission limit varies based on the distance to residential and/or sensitive receptors, including existing schools. The Option A emission limits are based on the maximum allowable emissions using a Tier 2 screening risk analysis that was based on a Maximum Individual Cancer Risk (MICR) of 25-in-a-million (or 10 in a million if less than 25 meters of a residential/sensitive receptor or less than 100 meters from an existing school). These emission limits were developed before the Office of Environmental Human Hazard Analysis (OEHHA) updated their health risk guidance in 2015.<sup>1</sup> Based on revised 2015 OEHHA health risk guidance, the current Rule 1469.1 emission limit in clause (d)(3)(A)(i) would be reduced from 0.018 to 0.0006 pounds per year for facilities located more than 25 meters from a residential or sensitive receptor.

Option B (Air Pollution Control Device) requires a facility to ventilate each chromate spray coating operation to air pollution control equipment with a rated particulate filtration efficiency of 99.97% or higher, for particulate matter 0.3 microns in size (the filtration efficiency of High Efficiency Particulate Air (HEPA) filters). Based on recent data, there are 115 Rule 1469.1 facilities, and all, except for three large aerospace facilities, comply with Option B point source requirements.

Under Option C (Facility-Wide Risk Limit), a facility is required to demonstrate that facility-wide emissions of all toxic air contaminants would not exceed a maximum cancer risk level of either 10 in-a-million or 25 in-a-million, depending on the distance to the receptor and the type of receptor. Under existing rule provisions, compliance with Option C is demonstrated either through an

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<sup>1</sup> Office of Environmental Health and Hazard Assessment. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* January 19, 2021 from <https://oehha.ca.gov/media/downloads/crn/2015guidancemanual.pdf>

approved health risk assessment (HRA), approved Risk Reduction Plan, or enforceable permit conditions. There are currently three large aerospace facilities meeting the requirements of Rule 1469.1 under Option C. All three facilities have approved health risk assessments, two of which were approved in 1998 and 2000 and one approved in 2015. Transfer Efficiency, Spray Booth Operations, and Other Requirements

Transfer efficiency is the fraction of coating that adheres to the part when spraying techniques are used. Rule 1469.1 requires a minimum coating application transfer efficiency of 65%, which is at least equivalent to the transfer efficiency when using a high-volume, low-pressure (HVLP) spraying technique.

Rule 1469.1 also includes general requirements for spray booths operations. Specifically, exhaust from spray booths must be vented such that there is a continuous inward airflow at all air opening during spraying operations, and the average inward face velocity through an open face spray booth shall be a minimum of 100 feet per minute or other approved minimum velocity. The existing rule does not include a requirement on how to demonstrate continuous inward airflow. After spraying operations have ceased, the Rule also requires the exhaust system's continued operation to remove contaminated air within the spray booth. The rule also prohibits the operation of a spray booth ventilation system when one or more spray booth filters are being replaced.

### **Housekeeping**

Rule 1469.1 requires that spraying and cleanup operations be conducted in a manner that minimizes fugitive emissions of atomized paint particles. The rule does not include requirements for areas to be cleaned, minimum cleaning frequencies, or approved cleaning methods. The rule specifies that when protective floor, wall, and exhaust coverings are removed, the ventilation system must be operating with the doors of an enclosed booth closed. Protective coverings intended for disposal must be encapsulated inside the booth, but there are no requirements for placing collected materials within closed containers.

### **Monitoring**

Rule 1469.1 also requires weekly visual inspections of the spray booth and filters for leaks, broken or torn filter media, and improperly installed filter media. The rule requires the use of a gauge to measure the pressure drop across the spray booth filters continuously. The pressure drop is required to be maintained at or below the maximum pressure drop established by permit conditions or manufacturer recommendations. There are no requirements for Rule 1469.1 facilities to conduct source tests.

### **Recordkeeping and Reporting**

Rule 1469.1 establishes recordkeeping requirements for chromate coatings usage and housekeeping. There are also recordkeeping requirements for the visual inspections and pressure drop readings. Rule 1469.1 includes annual reporting requirements of chromate coating use for facilities that comply with the Annual Emissions or the Facility-wide Risk Limit compliance options.

## **Exemptions**

Rule 1469.1 includes limited exemptions for touch up and repair operations conducted outside of a spray booth, but within a building provided emissions and cancer risk from touch up and repair operation are calculated and included in an approved Health Risk Assessment or compliance plan which meets the applicable risk levels.

## **OTHER REGULATIONS**

### **Aerospace NESHAP**

Spraying of chromate coatings at some aerospace facilities is also currently regulated under the federal National Emission Standards for Hazardous Air Pollutants for Aerospace Manufacturing and Rework Facilities (Aerospace NESHAP). The Aerospace NESHAP was promulgated in September 1995 and applies to facilities that are major sources of hazardous air pollutant emissions. The federal regulations establish filtration efficiency requirements for dry particulate filters for new and existing sources, based on the aerodynamic particle size range of paint overspray. Under the NESHAP, new sources (construction commenced on or after October 1996) are required to pass the air stream through either a three-stage dry filter system or a HEPA filter system before exhausting it to the atmosphere. Existing sources are required to pass the air stream from chromate spraying through either a two-stage dry filtration system or a water-wash system before exhausting it to the atmosphere.

### **California Air Resources Board**

The California Air Resources Board (CARB) develops Air Toxic Control Measures (ATCMs) for several mobile and stationary source categories as part of the State's air toxics program. The ATCMs are codified in the California Code of Regulations (CCR), and local air districts are required to implement the ATCMs or adopt or enforce equally effective or more stringent regulations. CARB has developed an ATCM for emissions from thermal spraying operations. Thermal spraying is not addressed in Rule 1469.1, but the South Coast AQMD has proceeded as allowed by law to implement the thermal spraying ATCM through permit conditions on thermal spraying equipment. CARB has also developed an ATCM for Emissions of Hexavalent Chromium and Cadmium Motor Vehicle and Mobile Equipment Coatings. South Coast AQMD Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations prohibits the use of automotive coating containing hexavalent chromium as part of CARB automotive coatings ATCM implementation. There are no ATCMs for chromate spray coating operations.

### **European Union**

On June 1, 2007, the European Chemicals Agency (ECHA) adopted a REACH regulation (an acronym for Regulation, Evaluation, Authorization, and Restriction of Chemicals) to regulate all chemical substances used in industrial processes and day-to-day lives. Under REACH, companies must identify and manage the risk of substances they manufacture and market in the European Union. Eventually, the goal is to substitute the most hazardous substances with safer alternatives.

On April 17, 2013, ECHA added several of the most common forms of hexavalent chromium on its "Authorisation List," citing them as carcinogenic and mutagenic and classifying them as "substances of high concern." On July 22, 2017, they added a second group of compounds,

including strontium chromate and potassium hydroxyoctaoxodizincatedichromate (commonly known as zinc potassium chromate or zinc chromate), which can be found in chromate coatings.

After the established sunset date, compounds placed on the Authorisation List are prohibited from use in, and importation into the EU, unless companies that produce or use them submit applications to exempt them for specific uses. If ECHA approves an application, the chemical will be permitted for use and can apply to both upstream producers and downstream users. The first group of hexavalent chromium compounds' sunset date was September 21, 2017, and January 22, 2019, for the second group.

The EU's Committees for Risk Assessment and Socioeconomic Analysis has approved several authorisations or exemptions with specific conditions for the use of hexavalent chromium applied to the surface of products. These authorisations are made on behalf of several downstream users. They cover a broad range of industry sectors such as car manufacturing, aerospace, aeronautics, and the manufacture of metals and construction equipment.<sup>2</sup> For more information on the EU's program and authorisations, please refer to their website at <https://echa.europa.eu/>.

## HEALTH EFFECTS OF HEXAVALENT CHROMIUM

In 1986, the California Air Resources Board (CARB) identified hexavalent chromium as a human carcinogen and toxic air contaminant. A “toxic air contaminant” or TAC is defined as “an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health” (H&SC Section 39655(a)).

Hexavalent chromium<sup>3</sup> is one of the most potent carcinogens. Hexavalent chromium is a multipathway toxic air contaminant, meaning there are multiple exposure pathways for a person to be exposed, such as inhalation and ingestion. Inhalation of hexavalent chromium can cause both cancer and non-cancer health effects. Inhalation of hexavalent chromium over a long period of time increases the risk of lung cancer and nasal cancer. The non-cancer effects of being exposed to hexavalent chromium at high levels over time can cause or worsen health conditions such as irritation of the nose, throat and lungs; allergic symptoms (wheezing, shortness of breath); and nasal sores and perforation of the membrane separating the nostrils.

The California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) developed cancer potency factors to estimate cancer risk associated with hexavalent chromium exposure. Using OEHHA's methodology to determine health risk, continual exposure to 0.045 ng/m<sup>3</sup> of hexavalent chromium for 30 years is estimated to increase cancer risk to 25 in a million. Exposure over shorter periods would be associated with lower cancer risks.

## CHROMATE COATINGS

Chromate coatings are primers, topcoats, and other types of coatings that contain chromates. A chromate is any salt or ester of chromic acid and is a form of hexavalent chromium that can be found in coatings. Typical forms of these chromates are strontium chromate, zinc chromate, and barium chromate. Chromate coatings are typically applied onto metal substrates in the aerospace,

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<sup>2</sup> European Chemicals Agency. Retrieved February 11, 2021 from <https://echa.europa.eu/>

<sup>3</sup> Office of Environmental Health and Hazard Assessment. *Health Effects of Hexavalent Chromium*. Retrieved January 14, 2021 from <https://oehha.ca.gov/air/health-effects-hexavalent-chromium>.

military, and commercial industries as an anti-corrosion agent. Due to their toxicity, there are ongoing attempts to find alternative coatings that are as effective but do not contain hexavalent chromium. Alternatives to Coatings Containing Chromates

Hexavalent chromium has been widely used for corrosion protection with applications in electroplating, stainless steel production, welding, chromate painting, and wood preservation. In 1978 and 1980, numerous studies by the World Health Organization (WHO) reported the carcinogenic nature of hexavalent chromium. It is known exposure can induce nose, throat, eye and skin irritation, and significantly increase an individual's risk of lung cancer. Due to increasing health concerns, legislation, initiatives, and organizations are working on transitions to alternative solutions.

On April 8, 2009, the Department of Defense signed a memorandum to minimize hexavalent chromium use. To mitigate the health risks of hexavalent chromium, Military Departments were directed to invest in appropriate research and development for alternative solutions, explore ways to reduce hexavalent chromium by-products, authorize the use of suitable alternatives, and share knowledge and findings. This policy applies to all new program starts, new program increments, and procurement of infrastructure materials, goods, and services.

The Advanced Surface Engineering Technologies for a Sustainable Defense (ASETSDefense) is a Department of Defense initiative sponsored by the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP). The goal is to facilitate new cost-effective, environmentally friendly technologies for surface engineering (coatings and surface treatment) while reducing or eliminating environmental safety and occupational health impacts from coatings and treatment processes that utilize hexavalent chromium, coatings that contain cadmium, and coatings that contain volatile organic compounds. SERDP and ESTCP have developed a database to provide access to background information and technical data from research, development, test, and evaluation efforts on alternatives to products containing hexavalent chromium. ASETSDefense also conducts workshops and presentations to exchange information and educate alternative solutions.<sup>4</sup>

## **NEED FOR PROPOSED AMENDMENTS TO RULE 1469.1**

Amendments to PAR 1469.1 are needed to update point source requirements, add control device parameter monitoring, enhance measures to reduce and contain fugitive emissions, and address emissions from dried coating removal activities.

### **Outdated Point Source Compliance Options**

As previously discussed, all but three facilities presently comply with the existing Rule 1469.1 control device option. The three facilities have approved health risk assessments that demonstrate that the facility-wide risk is below the rule's limit. Health risk assessments conducted before OEHHA's 2015 risk assessment guidance will not reflect current risk assessment methodologies that will have estimated risks that are approximately three times higher for residential or sensitive receptors even with no change in emissions. The approved health risk assessment also represents

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<sup>4</sup> Advanced Surface Engineering Technologies for a Sustainable Defense. Retrieved February 11, 2021 from <https://www.serdp-estcp.org/asetdefense>.

a one-time snapshot of facility operating conditions that may not reflect current conditions. Over time, chromate spray coating operating conditions may be within the established permit conditions but could be different than the actual emissions used to estimate health risk. Additionally, other TAC sources, outside of chromate spraying, could be added or modified at a facility, which may affect the overall facility-wide health risk. Moreover, the types and locations of sensitive receptors near a facility may change over time, changing a facilities' estimated health risk. There is also no requirement that the facility's operations be limited to the emissions used to estimate the health risks in the health risk assessment and no requirement to update the health risk assessment periodically as operations change or as health risk assessment procedures are updated. A control device requirement applied to all facilities removes uncertainties associated with the compliance options based on health risk analysis.

### **Lack of Spray Booth Parameter Monitoring**

Spray booth capture or control efficiency tests are not typically conducted, and source tests are not required under 1469.1 or conducted as part of the permitting process. Source testing is a challenge at chromate spray coating operations because the tests are generally conducted over a four-hour period. Since spraying operations tend to be intermittent and not continuous, source testing spraying operations may not represent "normal" operations. Rule 1469.1 requires facilities to continuously monitor the pressure drop across the spray booth exhaust filters and ensure that the pressure drop is below the maximum value established under permit conditions. This existing requirement identifies when filters are becoming clogged and need replacement; however, other methods, such as monitoring minimum pressure drop values, can notify an operator of potential filtration system issues.

Rule 1469.1 also includes a requirement that the average inward face velocity of air through an open face enclosure be a minimum of 100 feet per minute (fpm). However, the rule does not specify a method to measure inward face velocity, and there are no requirements for facilities to measure inward face velocity routinely. Moreover, this provision is only applicable to open face spray enclosures, and there are no similar provisions for enclosed spray booths. Requiring facilities to routinely measure inward face velocities following a test method can be another technique to ensure the air pollution control device is properly operating.

### **Outdated Fugitive Emission Control Requirements**

Rule 1469.1 currently includes housekeeping requirements to control fugitive emissions. Table 1 compares housekeeping requirements in current amended and adopted South Coast AQMD toxic metal particulate rules to existing Rule 1469.1 requirements. As shown in Table 1, recently amended or adopted toxic metal particulate rules require the use of approved cleaning methods, such as wet cleaning methods, to ensure that cleaning activities do not result in the generation of fugitive emissions. Recent toxic metal particulate rules also establish routine cleaning requirements in specific areas, rapid cleanup of spills, and procedures for waste collection and storage to reduce the potential for fugitive emissions. As presented in Table 1, Rule 1469.1 presently does not include these requirements.

**Table 1 - Comparison of Housekeeping Requirements in South Coast AQMD Toxic Metal Rules**

Rule Provisions	Rule 1407 Metal Melting (Cadmium, Arsenic, and Nickel)	Rule 1420 Lead Standards (Lead)	Rule 1420.1 Lead-Acid Battery Recycling (Lead, Arsenic)	Rule 1420.2 Lead Metal Melting (Lead)	Rule 1430 Metal Grinding (Various Metals)	Rule 1469 Anodizing and Plating (Hexavalent Chromium)	Rule 1469.1 Coating Spraying (Hexavalent Chromium)
Approved Cleaning Methods	Yes	Yes	Yes	Yes	Yes	Yes	No
Routine Cleaning	Yes	Yes	Yes	Yes	Yes	Yes	No
Cleaning Spills	Yes	Yes	Yes	Yes	No	Yes	No
Waste Collection and Storage	Yes	Yes	Yes	Yes	Yes	Yes	No

Improved housekeeping reduces the potential for chromate-containing materials to accumulate on surfaces and then be disturbed and re-entrained in the ambient air. The use of approved housekeeping methods to collect particulate matter can reduce the potential for fugitive emissions. Improved housekeeping involves properly handling these collected wastes laden with chromate coatings using closed containers and storing cleaning materials within an enclosed building.

### Uncontrolled Sources

#### *Dried Coating Removal*

Many Rule 1469.1 facilities conduct operations that involve sanding or scuffing of parts previously coated with chromate coatings. These activities, referred to as dried chromate coating removal, can result in the generation of fine particles that can become airborne. Facilities may conduct dried chromate coating removal in a controlled environment, such as within a spray booth or a clean room, where particles can be captured or collected; however, those particles exit the facility through the exhaust if they are not vented to appropriate air pollution controls. Facilities may also conduct these activities on downdraft tables, which use negative air to capture dust particles vented to a filtration system. However, a downdraft table may not adequately capture all emissions if the part is too large to rest entirely on the table. Rule 1469.1 does not include specific requirements to control emissions from these sources, and if control devices are used at a facility, the Rule does not include any performance standards.

#### *Demasking*

Facilities may also conduct demasking activities that involve removing tape or other materials used to prevent the adhesion of coatings to portions of workpieces subject to chromate spraying. As the masking material is removed from the part, dried chromate coating particles can flake away from the masking material. While these particles may not be as small as particles generated during dried coating removal activities, there is a potential for fugitive emissions from these activities. Rule 1469.1 does not include any specific provisions for demasking activities.

**PUBLIC PROCESS**

Development of PAR 1469.1 is being conducted through a public process. A PAR 1469.1 Working Group has been formed to provide the public and stakeholders an opportunity to discuss important details about the proposed rule and provide South Coast AQMD staff with input during the rule development process. The PAR 1469.1 Working Group includes representatives from businesses, environmental groups, public agencies, and consultants. South Coast AQMD has held one working group meeting at the South Coast AQMD Headquarters in Diamond Bar and five working group meetings via Zoom Video Communications (Zoom). The meeting at South Coast AQMD Headquarters was held on March 4, 2020. The meetings held via Zoom were on June 10, 2020, July 22, 2020, September 9, 2020, October 22, 2020, and January 13, 2021. A Public Workshop is scheduled for February 18, 2021, via Zoom to present the proposed amended rule and receive public comment.

## **CHAPTER 2 – INDUSTRY CHARACTERIZATION**

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## PROCESS AND EQUIPMENT DESCRIPTIONS

Chromate coatings are typically sprayed inside a spray booth vented to a combination of conventional spray booth filters, multi-stage filters, and High-Efficiency Particulate Air (HEPA) filters to control and capture overspray. The workpieces may be placed on racks, stands, and other workpiece support equipment during the spraying operation. Portions of the workpieces may be protected by masking tape or other masking material to prevent the adherence of coatings. After the spraying operation is concluded, workpieces may be cured within the booth. The workpiece support equipment may be used to transport the workpieces to a separate oven or placed in another area in the facility for curing. Once the curing process is completed, masking materials are removed, and any excess dried coating may be removed through physical or mechanical means, such as buffing, scuffing, sanding, or grinding.

### Chromate Coatings

Chromate coatings are typically applied onto metal substrates as an anti-corrosion agent in the aerospace, military, and commercial industries. Chromate coatings include primers, topcoats, and other types of coatings that contain chromates. Common forms of chromates found in coatings include strontium chromate, zinc chromate, and barium chromate.

### Spray Booths

A spray booth is a power-ventilated structure used to control and capture overspray, vapor, and residue. Activities are conducted within a spray enclosure vented to a filtration system to capture particles before the air exits through the spray booth exhaust ducting. The negative airflow through the spray booth's enclosure is controlled by an exhaust fan. There are various configurations of spray booths. A spray booth can be enclosed or have an open face. An enclosed spray booth is enclosed on all sides during operation, where the only openings are for makeup air. An open face spray booth has one side that is not enclosed, and air flows through the open face horizontally during operation. Spray booths may be non-bench booths or bench booths. A non-bench spray booth is a typical spray booth where both the operator and workpiece are within the spray enclosure area during operations. A bench spray booth is usually used for smaller workpieces and has a raised spray enclosure area where the operator cannot stand. Bench spray booths are typically open-faced; however, there are enclosed bench spray booths with integral work gloves that the operator must use to operate the booth (similar to an abrasive blasting cabinet). Figures 1 through 4 provide examples of various spray booth configurations.

**Figure 1 – Example of an Open Face Non-Bench Spray Booth**



**Figure 2 – Examples of Enclosed Non-Bench Spray Booths**



**Figure 3 – Example of an Open Face Bench Spray Booth<sup>5</sup>**



**Figure 4 – Examples of Enclosed Bench Spray Booths**



<sup>5</sup> Spray Systems Inc. *Bench Spray Paint Booths*. Retrieved February 9, 2021, from <https://www.spraysystems.com/products/bench-spray-paint-booths>

### Filter Media

To meet the pollution control requirements under Option B, a spray booth where chromate coatings are sprayed must be vented to HEPA filters or better. HEPA filters are individually tested and certified by the manufacturer to have a control efficiency of not less than 99.97% on particles that are 0.3 microns in size. The HEPA filters are typically the last stage of filter media prior to the exhaust; a spray booth will also typically have a prefilter and one or more layers of filter media that are less expensive with lower control efficiencies upstream of the HEPA filters to capture most of the coating particles to extend the life of the more expensive HEPA filter.

When filters are loaded with overspray material, they must be replaced with new filters to prevent rupture and to allow sufficient airflow through the booth. Rule 1469.1 requires the installation of a pressure gauge at the booth to monitor the pressure drop across the filter media. A Permit to Operate may also require a spray booth to have a pressure gauge dedicated to measuring the pressure drop across the HEPA filters.

### Spray Equipment

Facilities that apply chromate coatings often spray the coatings onto workpieces. Rule 1469.1, as with other South Coast AQMD coating rules, reduces overspray by requiring facilities to use high-volume low-pressure (HVLP) or electrostatic spray equipment. Figure 5 is an example of an HVLP spray gun. Facilities may also use other application methods demonstrated to have at least a 65% transfer efficiency. Transfer efficiency is the ratio of the weight of coating solids adhering to an object to the total weight of coating solids used in the application process, expressed as a percentage. Operations where coatings are hand applied or applied by flow coater, roll coater, dip coater are not subject to these requirements since transfer efficiency should be much higher than that of using spray method and should not lead to overspray.

**Figure 5 – Example of an HVLP Spray Gun**



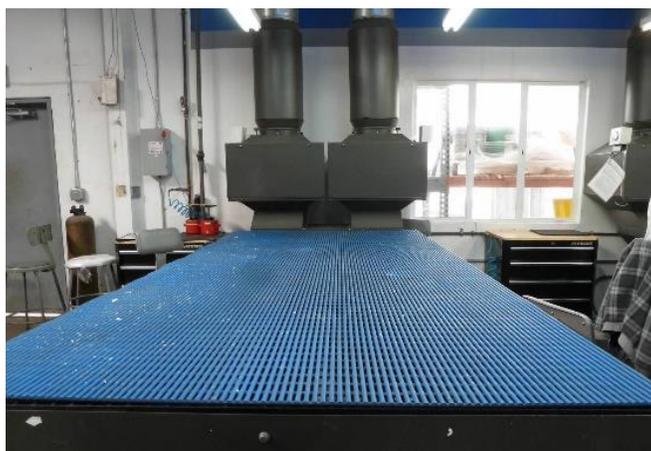
### Workpiece Support Equipment

Racks, stands, and other equipment used to hold or support workpieces during spraying and/or drying operations are referred to as workpiece support equipment. This equipment is often also used to transport workpieces and hold finished parts throughout the facility as part of the overall work process.

### Dried Chromate Coating Removal

For the purposes of PAR 1469.1, the physical or mechanical removal of dried coatings from workpieces (e.g., buffing, scuffing, sanding, grinding) is referred to as dried chromate coating removal. Some facilities currently conduct dried chromate coating removal activities within a spray booth or under a hood to control and reduce fugitive emissions of dried coating particles. Facilities may also conduct dried coating removal activities on downdraft tables to reduce fugitive emissions. Downdraft tables are workbenches with built-in ventilation to capture dust, smoke, and fumes and draw them away from the material being worked on (see Figure 6). They typically consist of a perforated surface whose underside is connected to a ventilation or dust collection system, including filters certified as HEPA or better. South Coast AQMD requires downdraft tables and other air pollution control devices to control fugitive emissions of dried chromate coatings to be issued Permits to Operate.

**Figure 6 – Example of a Downdraft Table**



### Demasking

Prior to applying coatings, facilities may apply masking tape or other masking materials onto particular areas of workpieces to prevent the adherence of coatings. After the coating has been sprayed on and has cured, the masking materials are removed, potentially disturbing the dried coatings that adhered onto the masking material. Demasking activities may generate larger dried coating particles than dried chromate coating removal activities and may be conducted in areas without fugitive emission controls.

## SPRAY BOOTH AIR POLLUTION CONTROL OPERATING PARAMETERS

There are two critical elements of spray booth operation: capture efficiency and control efficiency.

### Capture Efficiency

Capture efficiency ensures that a pollution control device is collecting coating particles. In the case of a spray booth, it ensures that coating particles are directed towards the filters at an appropriate velocity. Low capture efficiency can lead to increased fugitive emissions. An indicator of capture efficiency in a spray booth is the inward face air velocity—the measured speed of a spray booth’s inlet air. The air velocity can be measured at the front of the filters, or at the opening of an open face booth. Velocity measurements taken at the opening of an open face spray booth indicate that the velocity at the filter face should be at least the same or greater.

A spray booth can also demonstrate capture efficiency by meeting the criteria for a permanent total enclosure (PTE). The criteria are listed in U.S. EPA Method 204 - Criteria For and Verification of a Permanent or Temporary Total Enclosure (Method 204)<sup>6</sup>. The criteria are:

- Any natural draft opening (NDO) shall be at least four equivalent opening diameters from each emissions point;
- The total area of all NDOs shall not exceed 5% of the surface area of the enclosure’s four walls, floor, and ceiling;
- The average facial velocity of air through all NDOs shall be at least 200 feet per minute (fpm). The direction of airflow through all NDOs shall be into the enclosure; and
- All access doors and windows that are not considered NDOs must be closed during routine operations.

Open face spray booths would likely not meet the criteria for a PTE due to the large size of their openings.

### Control Efficiency

Control efficiency establishes the percent control of the pollution control device; a spray booth’s control efficiency is dependent on the efficiency of the filtration system. Spray booths vented to HEPA filters have a 99.97% control efficiency on 0.3 micron particles. While source testing is the most direct way to measure a spray booth’s air pollution control efficiency, there are difficulties that prevent the use of source tests at facilities with chromate spray coating operations. For example, the outlet measurements for a source test generally require four hours of continuous operation time. Since chromate spraying operations are generally not continuous over a four-hour period, requiring a source to operate for four hours would not represent typical operating conditions at the facility.

One common method to monitor filter performance is use of a pressure differential gauge at the spray booth to measure the pressure drop across the HEPA filter media. HEPA filters have a pressure drop operating range typically specified by the manufacturer. The spray booth’s South Coast AQMD Permit to Operate may also specify the maximum and minimum pressure drop

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<sup>6</sup> United States Environmental Protection Agency. Method 204 - Permanent (PTE) or Temporary Total Enclosure (TTE) for Determining Capture Efficiency. (2019, January 14). [https://www.epa.gov/sites/production/files/2019-06/documents/method\\_204\\_0.pdf](https://www.epa.gov/sites/production/files/2019-06/documents/method_204_0.pdf).

limits. If the pressure drop exceeds the maximum limit of the range, it indicates that the filters are clogged and must be replaced. If the pressure drop is below the minimum limit of the range, it indicates that there may be a tear, gap, or other issue with the integrity of the filter media, which would allow overspray to exit through the exhaust duct. While filter media pressure gauges are required for all spray booths where chromate coating spraying operations are conducted, a dedicated pressure gauge is needed to monitor the HEPA filters' status since they determine the highest control efficiency for the spray booth.

## **PATHWAYS FOR FUGITIVE EMISSIONS**

There are multiple pathways that fugitive emissions can be created and discharged from facilities that conduct chromate spraying operations. If not well controlled, the accumulation of fugitive emissions in and around a facility can impact neighbors. Fugitive emissions can be generated during spraying operations and ancillary operations such as dried coating removal and demasking activities and movement of equipment and materials containing or laden with chromate coatings. Approaches to minimize fugitive emissions generally include minimizing the accumulation of chromate coatings through housekeeping procedures, containment of chromate coatings that can become fugitive, and minimizing the release of fugitive emissions through best management practices and building enclosures.

### **Fugitive Emissions from Overspray Exiting a Spray Booth**

If a spray booth's ventilation control system is not operating properly during a chromate spraying operation, overspray may not be drawn towards the filter media and exit out the open face of an open face spray booth, as well as through any ingresses or egresses of an enclosed booth that are not closed during spraying. If the collection efficiency of the pollution controls is not adequate, there will also be a greater accumulation of overspray within the spray booth, which can be tracked out through foot traffic and movement of equipment out of the spray booth. An owner or operator conducting a spraying operation too close to a spray booth opening may also lead to overspray exiting the booth.

### **Dried Coatings Exiting a Spray Booth**

Over time, if not cleaned regularly, the surfaces of a spray booth will accumulate dried coating particles from overspray. The removal and replacement of used filters and other activities conducted within the booth can also deposit dried coating particles onto the spray booth surfaces. The movement of people and equipment in and out of the booth can track the dried coating particles out of the booth. Facilities may also line their spray booths with protective coverings to collect overspray. If conducted improperly, the removal of these protective coverings could disturb the dried overspray, which can exit the booth.

### **Workpiece Support Equipment**

Racks, stands, and other workpiece support equipment that are present in a spray booth while chromate coatings are being sprayed may become coated with overspray. Overtime a substantial accumulation of dried coating on workpieces can occur. Unlike the thin uniform layer of coating applied on workpieces, the dried coating material that builds up over time on workpiece support equipment can be uneven and rough and can protrude out from the equipment. Handling of the workpiece support equipment and the movement of the equipment around the facility can cause pieces of the dried coating material to fall off onto the ground, which can then be crushed into fine particles by foot traffic and equipment movement.

### **Dried Chromate Coating Removal Activities**

Dried chromate coating removal activities such as grinding, buffing, and sanding directly create fine chromate coating particles that can easily become fugitive emissions if not vented to air pollution controls. Chromate particles from dried coating removal activities can also accumulate on surfaces and become a source of fugitive emissions if not cleaned.

### **Demasking Activities**

Demasking can also be a source of fugitive emissions if not well contained. Demasking disturbs the dried coatings sprayed on the masking material, which can flake off and deposit onto the ground and other surfaces. Dried coatings associated with demasking activities are generally small chips and pieces of dried coatings. If accumulated on surfaces, they can be ground into fine particles by foot traffic and equipment movement and can become a source of fugitive emissions if not cleaned.

### **Improper Waste Storage**

A facility's chromate spray coating operation generates various types of waste materials that may contain chromate coatings. Used filters, masking materials, spray booth protective coverings, and disposable personal protective equipment are laden with dried chromate coating particles, and if not properly disposed of in closed containers, can be potential sources of fugitive emissions.

## **OVERVIEW OF FACILITIES**

There are approximately 115 facilities expected to be impacted by PAR 1469.1, with an estimated 250 spray booths in total across the facilities. Of those spray booths, 109 are open face non-bench spray booths, 68 are enclosed non-bench spray booths, and 18 are bench spray booths, of which at least six are enclosed bench spray booths. Based on the available information, the configuration of the remaining booths was unclear; however, all are permitted to conduct chromate spray coating operations. All spray booths permitted for chromate spray coating operations are equipped with HEPA or better filtration, with the exception of eight spray booths at three facilities that comply with the Rule 1469.1 Option C facility-wide cancer risk limits. Site Visits and Facility Survey

As part of PAR 1469.1 development, staff conducted site visits at 16 facilities and observed 30 paint spray booths. Staff also distributed a survey on January 31, 2020, to the known universe of spraying facilities to gather information about equipment, operations, and general industry practices and approaches to housekeeping and waste disposal. Thirty-one (31) facilities returned completed survey responses.

During the site visits and compliance inspections, housekeeping procedures and schedules were observed to be inconsistent across facilities. Some facilities conducted daily housekeeping procedures while others described housekeeping frequencies as weekly, or on an as-needed basis. Some facilities used vacuum equipment with HEPA filtration for housekeeping, while others used shop vacuums, which would not meet the definition of a PAR 1469.1 HEPA vacuum. Waste collection and storage procedures also varied between facilities, with some facilities immediately placing waste materials in closed containers while others allowed wastes to accumulate or placed wastes in open containers.

Staff also observed demasking activities that were conducted in different environments with varying fugitive dust-reducing measures. In some cases, demasking was conducted on a down draft table, and waste material was immediately placed into closed containers. In other instances, used masking tape containing dried chromate coatings was allowed to accumulate in the open.

Survey responses to a question regarding the frequency of housekeeping in spray booth areas corroborated that housekeeping frequency varied across the facilities. Fifteen (15) facilities conducted daily cleaning, but some cleaned less frequently: every other day, once a week, once a month, or had no set cleaning frequency. Survey responses also found that a majority of the thirty-one respondents, eighteen (18) facilities, did not conduct spray booth parameter monitoring outside of the required filter pressure drop, while the remaining facilities responded that they conducted tests for air velocity and capture efficiency. Survey responses also indicated that dried chromate coating removal activities were often conducted in spray booths, or in other controlled environments, such as clean rooms, or on downdraft tables. However, demasking activities were not conducted in controlled environments, and facilities did not indicate if they implemented any housekeeping or control measures to reduce fugitive emissions from these activities.

**CHAPTER 3 – SUMMARY OF PROPOSED AMENDED RULE 1469.1**

## **OVERALL APPROACH**

The objective of PAR 1469.1 is to further reduce hexavalent chromium emissions from spraying operations and from related activities such as dried chromate coating removal activities at facilities that spray chromate coatings. PAR 1469.1 accomplishes this with updated point source requirements and control device parameter monitoring. Updated point source provisions include a requirement for a minimum of HEPA filtration for all new spray booths and a minimum of HEPA control devices for all dried coating removal activities. Amended parameter monitoring provisions include requirements to measure inward air velocity within spray booths and to monitor pressure drop at the spray booth filtration system. PAR 1469.1 also includes updated housekeeping requirements and adds best management practices and building enclosure requirements. Housekeeping requirements and best management practices minimize the accumulation of materials that may contain chromates outside of spray booths that can become fugitive emissions. Building enclosure requirements prevent the migration of fugitive emissions from leaving a facility. PAR 1469.1 also includes amended provisions for visual inspections, new requirements for exhaust duct cleaning, amended recordkeeping requirements, prohibitions of new open faced spray booths, and amended exemptions.

The following is a description of PAR 1469.1 provisions.

## **PROPOSED AMENDED RULE 1469.1**

### **Purpose – Subdivision (a)**

The purpose of PAR 1469.1 is to reduce emissions of hexavalent chromium from spray coating and a clarification has been added to also include operations related to spray coating.

### **Applicability – Subdivision (b)**

Rule 1469.1 applicability is currently limited to operations where coatings containing hexavalent chromium are sprayed, except for thermal spraying operations. However, as mentioned in Chapter 1, hexavalent chromium emissions can originate from chromate spraying operations and other associated operations such as dried chromate coating removal activities. Accordingly, PAR 1469.1 amends the applicability to an owner or operator spraying chromate coatings or conducting other related activities such as dried chromate coating removal, demasking, and any other chromate spraying related operations.

### **Definitions – Subdivision (c)**

PAR 1469.1 includes definitions for specific terms. Several of the definitions are based on other recent toxic metal particulate rules, while other definitions are unique to PAR 1469.1.

Table 2 provides a list of modified, new, and removed PAR 1469.1 definitions. Please refer to PAR 1469.1 for actual definitions. Key definitions are discussed in the associated rule requirement discussions.

**Table 2 - Summary of Definitions**

Modified Definitions	New Definitions	Removed Definitions
<ul style="list-style-type: none"> <li>• Chromate</li> <li>• Coating</li> <li>• Compliance Plan Approval letter</li> <li>• High Efficiency Particulate Air filter</li> <li>• High-Volume, Low-Pressure Spray</li> <li>• Open Face Spray Booth</li> <li>• Sensitive Receptor</li> <li>• Thermal Spraying Operations</li> <li>• Touch Up and Repair Operation</li> <li>• Transfer Efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Approved Cleaning Methods</li> <li>• Bench Spray Booth</li> <li>• Building</li> <li>• Enclosed Spray Booth</li> <li>• Demasking Activity</li> <li>• Dried Chromate Coating Removal Activity</li> <li>• HEPA Vacuum</li> <li>• Permanent Total Enclosure</li> <li>• Spray Booth</li> <li>• Sticky Mat</li> <li>• Workpiece Support Equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Capture Efficiency</li> <li>• Coating Application Equipment</li> <li>• Control Efficiency</li> <li>• Equipment</li> <li>• Existing Air Pollution Controls</li> <li>• Existing Source or Source</li> <li>• New Source</li> <li>• Primer</li> <li>• Responsible Official</li> <li>• Spraying Operation or Spraying Process</li> </ul>

### Reorganization of Rule 1469.1

Rule 1469.1 subdivision (d) includes general requirements for spray booth operation, transfer efficiency, compliance options for point source emissions, provisions for compliance plan submittal, compliance notifications and housekeeping requirements. Subdivisions (e), (f), and (g) of the existing Rule 1469.1 establish provisions related to the compliance options described in Chapter 1. Existing Rule 1469.1 subdivisions (h), (i), (j), (k) and (l) include exemptions, compliance test methods, recordkeeping requirements, monitoring requirements and reporting requirements, respectively. Many of the existing Rule 1469.1 requirements have been maintained or amended but have been reorganized into different subdivisions of PAR 1469.1 to be consistent with recent toxic metal particulate rules. Additionally, PAR 1469.1 includes interim requirements in subdivision (o) where the current rule provisions remain in place until new requirements become effective. Table 3 provides a summary of current rule provisions and the corresponding requirements in PAR 1469.1. A discussion of PAR 1469.1 requirements follows Table 3.

**Table 3 – Prior Requirements**

<b>Rule 1469.1 Requirement</b>	<b>Rule 1469.1 Reference</b>	<b>PAR 1469.1 Requirement</b>	<b>PAR 1469.1 Reference</b>
Inward Face Velocity	(d)(1)(B)	Interim Requirements for Facilities	(o)(1)
Post Spraying Ventilation	(d)(1)(C)	Best Management Practices	(j)(2)(B)
Transfer Efficiency	(d)(2)	Best Management Practices	(j)(3)
Control Device	(d)(3)(B)	Point Source Requirements	(d)(1)
Health Risk Compliance Options*	(d)(3)(A) and (d)(3)(C)	Alternate Point Source Requirements	(d)(1)(B) and (e)
Compliance Plan Provisions*	(d)(4) to (d)(6)	Compliance Plan Requirements	Appendix 2
Housekeeping	(d)(7)	Interim Requirements for Facilities	(o)(2)
Emission Inventory	(e)	Removed	-
New and Modified Sources	(f)	Removed	-
Source Test Results	(g)	Removed	-
Exemptions	(h)	Exemptions	(p)
Capture Efficiency Test Method	(i)(1)	Removed – Replaced with Velocity Test Method	Appendix 1
Alternative Transfer Efficiency Test Method	(i)(2)	Best Management Practices	(j)(3)(C)
Recordkeeping Requirements	(j)	Recordkeeping Requirements	(m)
Visual Monitoring	(k)(1)	Visual Inspections	(j)(8)
Pressure Drop Monitoring	(k)(2)	Interim Requirements for Facilities	(o)(3)
Reporting Requirements*	(l)	Removed	-

\*Applicable to existing facilities with approved Health Risk Assessments.

### **Point Source Requirements – Subdivision (d)**

Rule 1469.1 includes three point source compliance options: Option A: Annual Emission Limit; Option B: Air Pollution Control Device; or Option C: Facility-wide Risk Limit. As discussed in Chapter 1, the Annual Emission Limit and the Facility-wide Risk Limit are based on an analysis of health risk at a given point and time and site-specific conditions may change. To reduce uncertainties associated with the Options A and C compliance alternatives, PAR 1469.1 requires all facilities to comply with current Rule 1469.1 air pollution control device requirements. PAR 1469.1 also includes provisions for the three facilities currently complying under a health-risk option to continue to be subject to existing provisions until air pollution control device requirements can be met. The following paragraphs describe subdivision (d) requirements.

***Air Pollution Control Device Efficiency (d)(1)***

Subparagraph (d)(1)(A) establishes the requirement that chromate spray coating operations be vented to an air pollution control system equipped with filters that are individually tested and certified by the manufacturer to have a control efficiency of at least 99.7 percent on 0.3 micron or smaller particles. As mentioned, this is an existing requirement, however, the air pollution control device description has been modified. Specifically, existing Rule 1469.1 requires the ventilation of each spraying operation to air pollution equipment with a rated particulate filtration efficiency of 99.97 percent or higher, for particulate matter 0.3 microns or larger. This description was intended to describe HEPA filters, however, does not allow for other control technologies which surpass HEPA, such as ULPA filters. Accordingly, the control device description in subparagraph (d)(1)(A) is proposed to be modified to allow use of HEPA or better filtration. For reference, ULPA filters are a subset of HEPA filters that are certified to achieve a higher minimum filtration of 99.9995 percent for particles sized 0.12 microns or larger. Subparagraph (d)(1)(B) includes provisions which allow an owner or operator of an existing facility with an approved Compliance Plan or an approved Health Risk Assessment to be subject to the subdivision (e), alternate point source requirements until subparagraph (d)(1)(A) provisions are met by the deadlines specified in subparagraph (d)(2)(B). As mentioned, there are three facilities that have an approved Compliance Plan or approved Health Risk Assessment.

***Applicability and Timeframe for Alternate Point Source Requirement (d)(2)***

Paragraph (d)(2) requires that facilities meeting the alternate point source requirements to submit permit applications and install the air pollution control devices needed to comply with paragraph (d)(1)(A). This applies to the three facilities with an approved Compliance Plan or approved Health Risk Assessment. Subparagraph (d)(2)(A) requires facilities to submit a complete permit application for an air pollution control device that represents HEPA or better filtration no later than January 1, 2023. Subparagraph (d)(2)(B) requires facilities that have submitted a completed application to meet the requirements of HEPA or better filtration within 18 months after a Permit to Construct has been issued by South Coast AQMD or January 1, 2026. Beginning January 1, 2026, a spray booth that meets the requirements of subdivision (e) cannot be operated for the spraying of chromate spray coating operations until the spray booth is vented to filters that meet the requirements of subparagraph (d)(1)(A).

***Spray Booth Operation (d)(3)***

Paragraph (d)(3) requires that the spray booth be operated in a manner that minimizes fugitive hexavalent chromium emissions and is properly vented. Subparagraph (d)(3)(A) requires operators to ensure visible emissions do not exit the spray booth.

Subparagraph (d)(3)(B) requires spray booths to be vented with an inward flow maintained at all air openings such that the paragraph (o)(1) interim requirements for open face spray booths are met through January 1, 2023 and the applicable spray booth capture efficiency requirements of subdivision (g) are met after January 1, 2023. Provisions for air velocity monitoring requirements are discussed later in this chapter under subdivision (g).

Subparagraph (d)(3)(C) requires that all spray booth filters are properly seated and are free of leaks, breaks, and tears when conducting chromate spraying.

**Alternate Point Source Requirements for Chromate Spraying Operations With Compliance Plans or Health Risk Assessments Approved Before [Date of Rule Adoption] – Subdivision (e)**

PAR 1469.1 establishes requirements for facilities that do not have spray booths equipped with HEPA or better filters. These alternate point source requirements only apply to existing facilities at the time of the adoption of PAR 1469.1 which have previously submitted compliance plans or an approved health risk assessment. The intent of the subdivision is to provide interim requirements while facilities transition into installing an air pollution control system equipped with HEPA filters or better.

Paragraph (e)(1) requires facilities to continue to meet conditions in an approved Compliance Plan or any enforceable conditions until the air pollution control device requirements of subparagraph (d)(1)(A) are met.

Rule 1469.1 currently requires facilities complying with a Compliance Plan to post the Compliance Plan approval letter or keep it with the facility permit on-site. Paragraph (e)(2) requires the continued posting of Compliance Plan approval letters (clearly visible and accessible within 8 meters [26 feet] of the spray booth identified in the Compliance Plan) or with the facility permit to maintain this existing requirement until the requirements of subparagraph (d)(1)(A) are met.

**Point Source Requirements for Dried Chromate Coating Removal Activities – Subdivision (f)**

PAR 1469.1 adds requirements to control emissions from dried chromate coating removal activities that can be a source of fugitive emissions.

***Control Device Requirement (f)(1)***

Paragraph (f)(1) specifies that beginning January 1, 2026 or the date specified in subparagraph (f)(2)(B), dried chromate coating removal activities must be vented to an air pollution control device. Subparagraph (f)(1)(A) requires that the control device be equipped with filters that are individually tested and certified by the manufacturer to have a control efficiency of at least 99.97 percent on 0.3 micron or smaller particles. This allows for the use of HEPA filters at a minimum or more efficient than HEPA such as ULPA filters. Subparagraph (f)(1)(B) requires control devices to be operated pursuant to a South Coast AQMD permit. Control devices examples include a downdraft table or a spray booth.

***Control Device Permit Application (f)(2)***

Paragraph (f)(2) provides a compliance pathway for facilities that conduct dried chromate coating removal activities without a control device or with a control device that does not meet the requirements of (f)(1). Specifically, subparagraph (f)(2)(A) requires these facilities to submit a complete permit application for a control device that meets the requirements of (f)(1)(A) no later than January 1, 2023. Under subparagraph (f)(2)(B), these facilities are required to vent dried coating removal activities to the permitted control device that meets the requirements of paragraph (f)(1) within 18 months after the Permit to Construct has been issued by South Coast AQMD or by January 1, 2026, whichever is sooner.

***Control Device Performance Standard (f)(3)***

Paragraph (f)(3) requires control devices for dried chromate coating removal activities be equipped with filters that are properly seated and are free of leaks, breaks, and tears.

**Spray Booth Capture Efficiency Requirements – Subdivision (g)*****Interim Requirements Before January 1, 2026***

Rule 1469.1 includes a requirement that the average inward face velocity of air through an open face spray booth be a minimum of 100 feet per minute or other minimum velocity approved by the Executive Officer. This existing requirement is maintained in PAR 1469.1 paragraph (o)(1) until January 1, 2026, or the date specified in subparagraph (g)(2)(B).

***Capture Efficiency Requirements (g)(1) Beginning January 1, 2026***

PAR 1469.1 establishes new capture efficiency requirements for four types of spray booths: bench booths (open face and enclosed) and non-bench booths (open and enclosed). Bench booths are defined in PAR 1469.1 as a spray booth with a raised spray enclosure area typically used for smaller workpieces where the operator cannot stand within the enclosure and non-bench booths refer to structures where the operator stands within the booth. Open face booths are defined in PAR 1469.1 as spray booths with one side of the booth is not enclosed and air flows through the open face horizontally. Enclosed booths are defined as a spray booth with four sides that are enclosed during spraying operations.

Paragraph (g)(1) requires that a spray booth meet capture efficiency requirements demonstrated either through inward face air velocity measurements or by demonstrating that it meets the criteria of a permanent total enclosure (PTE) no later than January 1, 2026, or the date specified in subparagraph (g)(2)(B). Subparagraph (g)(1)(A) requires an owner or operator to demonstrate that the PAR 1469.1 Table 1 (shown below as Table 4) average and minimum velocity requirements are met using the measurement procedures specified in PAR 1469.1 Appendix 1 – Inward Face Air Velocity Measurement Procedures.

**Table 4 – Spray Booth Inward Face Velocity Requirements**

<b>Spray Booth Type</b>	<b>Measurement Location</b>	<b>Average Velocity of Measurement Points</b>	<b>Minimum Velocity at Each Measurement Point</b>
Enclosed Non-Bench	At the filter face	100 feet per minute	75 feet per minute
Open Face Non-Bench	At the opening of the booth		
Enclosed Bench	At the filter face	150 feet per minute	125 feet per minute
Open Face Bench	At the opening of the booth		

PAR 1469.1 Appendix 1 requires that the air velocity measurements must be conducted using an anemometer with an accuracy within +/- 10 percent of full scale and operated and calibrated in accordance with the manufacturer's specifications. Five measurements must be taken in a pattern

shown in the Appendix 1 examples. For enclosed booths, the measurements must be taken within six (6) to twelve (12) inches from the exhaust filter face; enclosed booths that have more than one filter face should take five (5) measurements in front of each filter face. For open face booths, the measurements are to be taken no more than one (1) inch inside the plane of the open face. To meet the PAR 1469.1 inward face air velocity requirements, the average of all five measurements at each face must be above the PAR 1469.1 Table 1 average velocity of measurement point values with no measurement point value below the PAR 1469.1 Table 1 minimum velocities.

Subparagraph (g)(1)(B) provides another pathway for facilities to demonstrate that a spray booth meets the capture efficiency requirements by January 1, 2025 through demonstrating that the spray booth meets the design requirements of a PTE, per U.S. EPA Method 204 or other design as approved by the Executive Officer. In order to be designated as a PTE, the total area of natural draft openings in the structure cannot exceed 5 percent of the surface area of the structure's walls, floor, and ceiling. As a result, subparagraph (g)(1)(B) applies to enclosed spray booths, as the large size of the openings of open face booths will likely disqualify open face spray booths from consideration. A summary of the EPA Method 204 criteria for meeting the definition of a PTE is included in Chapter 2.

#### ***Spray Booth Modifications to Meet Capture Efficiency Requirements (g)(2)***

As mentioned, PAR 1469.1 requires facilities to demonstrate compliance with the capture efficiency requirements in paragraph (g)(1) no later than January 1, 2026. The period from the date of rule adoption until January 1, 2023 is intended to allow facilities to conduct spray booth evaluations to determine if the spray booth can meet the PAR 1469.1 requirements. If a facility determines the spray booth cannot meet the capture efficiency requirements, paragraph (g)(2) of PAR 1469.1 establishes a compliance pathway for facilities to continue to operate the spray booth provided a permit application is submitted to modify the booth as necessary to meet the PAR 1469.1 capture efficiency requirements. Specifically, under paragraph (g)(2)(A) a facility operator is required to submit a complete permit application to modify the spray booth by January 1, 2023. Subparagraph (g)(2)(B) requires facilities submitting a complete permit application to modify the spray booth within 18 months after the Permit to Construct has been issued by South Coast AQMD or by January 1, 2026, whichever is sooner.

#### ***Capture Efficiency Compliance after January 1, 2026 (g)(3)***

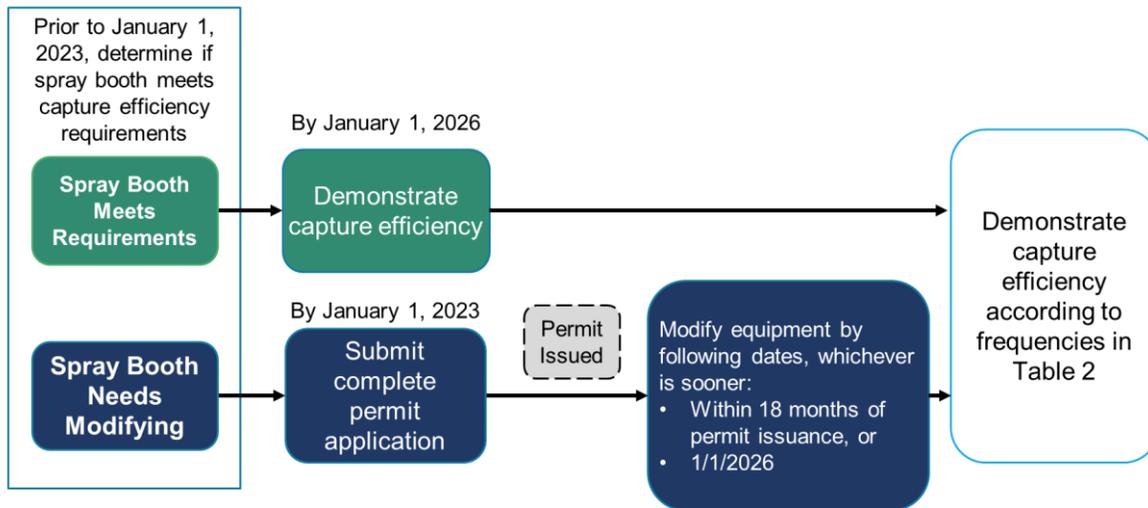
Paragraph (g)(3) requires all facilities to either conduct air velocity measurements or demonstrate that the spray booth meets the requirements of a PTE in accordance with the capture efficiency frequency specified in PAR 1469.1 Table 2 (shown below as Table 5).

**Table 5 – Capture Efficiency Demonstration Frequency**

Spray Booth Type	Demonstration Frequency
Enclosed Non-Bench or Bench	At least once every 12 calendar months from the previous air velocity measurement pursuant to subparagraph (g)(1)(A) or permanent total enclosure demonstration pursuant to subparagraph (g)(1)(B)
Open Face Non-Bench or Bench	At least once every six calendar months from the previous air velocity measurement pursuant to subparagraph (g)(1)(A)

Facilities with enclosed booths are required to demonstrate the capture efficiency requirements are met at least once every 12 calendar months. The demonstration frequency for open face booths is a minimum of at least once every six calendar months. For the purposes of PAR 1469.1, demonstrations can occur any day within the applicable calendar month. Figure 7 provides an overview of the capture efficiency demonstration schedule.

**Figure 7 – Schedule For Capture Efficiency Demonstration**



***Failure to Meet Capture Efficiency Requirements (g)(4)***

Paragraph (g)(4) establishes procedures for facilities with spray booths that do not meet the capture efficiency requirements after January 1, 2026. Under subparagraphs (g)(4)(A) and (g)(4)(B), a spray booth that fails to meet the requirements cannot be operated for chromate spray coating operations or for dried chromate coating removal activities until necessary actions or repairs are conducted and a demonstration that the capture efficiency requirements are met. Subparagraph (g)(4)(C) specifies that if the facility cannot complete the necessary actions or repairs within 30

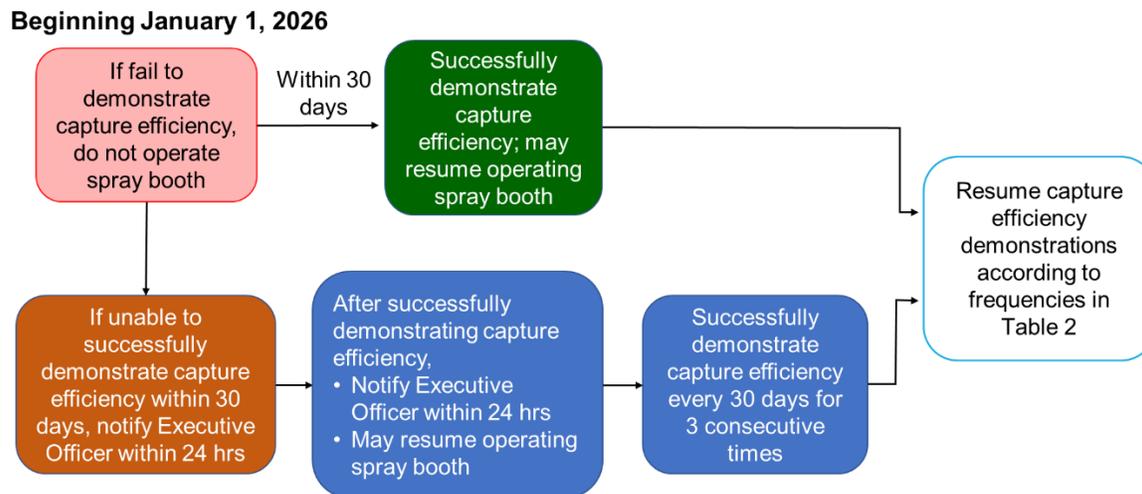
days, the facility is required to notify South Coast AQMD within 24 hours of knowing that the actions or repairs will take more than 30 days.

### ***Capture Efficiency Demonstration Schedule After a Failure (g)(5) and (g)(6)***

Paragraph (g)(5) includes requirements for spray booths that have demonstrated that they meet the capture efficiency requirements after the 30 day period in subparagraph (g)(4)(C). Subparagraph (g)(5)(A) requires a facility to notify South Coast AQMD within 24 hours of meeting the requirements only if the repairs needed more than 30 days and a previous notification was required pursuant to subparagraph (g)(4)(C). A notification is not required if the repairs can be completed in 30 days or less. Subparagraph (g)(5)(B) and paragraph (g)(6) requires that three consecutive passing capture efficiency demonstrations (either a passing air velocity measurement or a demonstration that the spray booth meets the PTE requirements) be conducted once every 30 days on the spray booth before a facility is subject to the frequency schedule in PAR 1469.1 Table 2.

An owner or operator of a spray booth that fails an air velocity measurement at any time after January 1, 2026, including any of the three consecutive tests conducted pursuant to paragraph (g)(6), must follow the procedures in paragraph (g)(4), as well as the procedures in paragraphs (g)(5) and (g)(6), if applicable. Figure 8 provides an overview of the procedures a facility must follow after failing to demonstrate the capture efficiency.

**Figure 8 – Schedule After a Failure to Demonstrate Capture Efficiency**



### **Requirements for Building Enclosures – Subdivision (h)**

PAR 1469.1 adds requirements for spraying and spraying related activity conducted within building enclosures. A building enclosure is defined as a permanent building or physical structure with a floor, walls, and a roof to prevent exposure to the elements, (e.g., precipitation, wind, run-off), with limited openings to allow access for people, vehicles, equipment, or parts.

Paragraph (h)(1) establishes that spraying operations, dried chromate coating removal activities, and demasking activities must be conducted within a building enclosure due to the potential for these activities to release fugitive emissions.

Paragraph (h)(2) and (h)(3) establish the requirements that workpiece support equipment and cleaning equipment used for housekeeping are required to be stored within the building enclosure.

Beginning January 1, 2022, subparagraph (h)(4)(A) establishes requirements to close building openings (except for the movement of people, vehicles, or equipment) within 20 feet of open face spray booths and areas where dried chromate coating removal or demasking activities occur. Subparagraph (h)(4)(B) establishes the following as acceptable methods to close building openings:

- Door that automatically closes
- Overlapping plastic strip curtains
- Vestibule
- Airlock system
- Alternative method to minimize the release of fugitive emissions from the building subject to Executive Officer approval

The above methods for closing building openings are consistent with provisions included in other recently amended or adopted South Coast AQMD toxic metal particulate rules. The January 1, 2022 effective date is intended to provide facilities time to meet the enclosure requirements.

### **Housekeeping Requirements – Subdivision (i)**

#### ***Interim Housekeeping Requirements Before January 1, 2022***

Rule 1469.1 currently requires spraying and cleanup operations at a chromate spraying operation to be conducted in a manner that minimizes fugitive emissions of atomized paint particles. This existing requirement is maintained in PAR 1469.1 paragraph (o)(2) until January 1, 2022.

#### ***Cleaning Locations and Frequencies (i)(1) and (i)(2) Beginning January 1, 2022***

Beginning January 1, 2022, PAR 1469.1 establishes enhanced housekeeping requirements and requires use of approved cleaning methods to minimize the generation of fugitive emissions during cleaning activities. Approved cleaning methods defined in PAR 1469.1 include wet mop, damp cloth, wet wash, low pressure spray nozzle, HEPA vacuum, protective coverings, or other method as approved by the Executive Officer. A HEPA vacuum is defined in PAR 1469.1 as a vacuum that is both designed to be fitted and used with a filter that is individually tested and certified by the manufacturer to have a control efficiency of not less than 99.97 percent on 0.3 micron particles.

Paragraph (i)(1) requires routine cleaning within 20 feet of spray booth entrances, and areas used for dried chromate coating removal, demasking, paint mixing, equipment storage, and waste storage. Paragraph (i)(2) requires routine cleaning within workpiece support equipment transit paths and workpiece support equipment storage areas. Cleaning frequencies for the locations identified by paragraph (i)(1) and (i)(2) requirements are listed in PAR 1469.1 Table 3 (shown below as Table 6). The cleaning frequencies are dependent on activities within the specific areas. For example, for workpiece storage areas, PAR 1469.1 Table 3 requires cleaning once per week for any week when stored workpiece support equipment is moved on one or more days. PAR 1469.1 Table 3 also establishes different cleaning frequencies for areas located within or outside of a Permanent Total Enclosure (PTE). Specifically, Table 3 of PAR 1469.1 requires weekly cleaning for areas outside a PTE and monthly cleanings for identified areas that are within a PTE. The PAR 1469.1 PTE definition is consistent with Rule 1469 – Hexavalent Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations PTE definition.

**Table 6 - Cleaning Frequencies**

<b>Applicable Provisions</b>	<b>For Areas Not Located Within a Permanent Total Enclosure</b>	<b>For Areas Located Within a Permanent Total Enclosure</b>
(i)(1)(A) (i)(1)(B)	Once per week, for any week when chromate spraying operations are conducted on one or more days	Once per month, for any month when chromate spraying operations are conducted on one or more days
(i)(1)(C) (i)(1)(D), (i)(1)(E), and (i)(1)(F)	Once per week, for any week when activities are conducted on one or more days	Once per month, for any month when activities are conducted on one or more days
(i)(2)(A) (i)(2)(B)	Once per week, for any week when workpiece support equipment is moved on one or more days	Once per month, for any month when workpiece support equipment is moved on one or more days

***Outdoor Spray Booths and Spill Cleanup (i)(3) and (i)(4)***

For enclosed spray booths not located within a building enclosure, paragraph (i)(3) requires daily cleaning within 20 feet of ingress and egress on days when chromate spraying operations are conducted within the booth. This requirement is only for chromate spray coating operations conducted in spray booths which are not within a building enclosure (i.e., spray booths located outside a building).

To minimize the potential to generate fugitive emissions, paragraph (i)(4) requires cleanup of spills of liquid or solid material that may contain chromates within one hour after being spilled.

***Spray Booths Interior Cleaning (i)(5) and (i)(6)***

Paragraph (i)(5) requires weekly cleaning of spray booth floors that do not have protective coverings. This requirement is also based on use of the booth for chromate coating spraying operations and cleaning is not required on weeks where activities subject to PAR 1469.1 are not conducted.

Paragraph (i)(6) requires the removal and replacement of spray booth protective floor or wall coverings every six months.

***Sticky Mat Alternative (i)(7)***

During rule development, some stakeholders commented that spray booth entrance cleaning using approved cleaning methods might conflict with current industry practice of using sticky mats or tacky mats that would remove the dried coating particles from the bottoms of shoes and equipment wheels when those items pass over the sticky mats. Additionally, the use of sticky mats in the spray booth is an effective way of ensuring that chromate paint particles stay within the spray booth. Paragraph (i)(7) has been added to address these comments by allowing facilities to use sticky mats as an alternative to weekly spray booth entrance cleaning and protective covering removal and replacement requirements. Under subparagraph (i)(7)(A) sticky mats are required at

spray booth ingress and egress points and be at least two feet in depth and as wide as the opening. Under subparagraph (i)(7)(B) and owner or operator must ensure that all foot and equipment traffic pass over the mats. Subparagraph (i)(7)(C) requires the mats to be replaced each day when the booth is used for chromate spraying operations and disposed of in a closed container before removal from a building. A sticky mat is defined in PAR 1469.1 as a non-reusable floor mat with an adhesive or tacky surface that removes particles from shoes, wheels, or other objects that travel over the mat. Waste Materials in Closed Containers (i)(8)

Paragraph (i)(8) requires the immediate placement of waste materials that may contain chromates into a closed container that is closed except when being filled or emptied. Waste materials include items including, but not limited to, used single use PPE masks, cleaning cloths, used masking material and used filters. Paragraph (i)(8) also requires the container to be lined with a removable bag if the waste material will be transferred to another on-site container.

#### ***HEPA Vacuums (i)(9)***

Subparagraph (i)(9)(A) requires that if a HEPA vacuum is used to comply with housekeeping provisions of subdivision (i), the HEPA filter must be free of leaks, breaks, tears, or other types of damage, and securely latched and properly situated in the vacuum to prevent air leakage from the filtration system. An owner or operator should have a HEPA vacuum maintained and serviced per manufacturer's recommendations to ensure the integrity of the filtration as any breakthrough passing the HEPA filter will result in metal TACs entrained into the air. Workers should follow the manufacturer's recommended precautions regarding Personal Protective Equipment when servicing the HEPA vacuum. All wastes collected and removed during filter changes or cleaning of the HEPA vacuum must be handled, stored, and disposed as hazardous waste.

PAR 1469.1 includes a definition for a HEPA vacuum to differentiate an acceptable device versus a home or commercial "HEPA-like" vacuums, which are not tested nor intended to clean-up toxic metal TAC spills. A certification or statement from the manufacturer can demonstrate that the vacuum satisfies the PAR 1469.1 definition that the fitted HEPA filter is individually tested and certified. "HEPA-like" vacuums with filters that are lot (batch) tested, does not satisfy the PAR 1469.1 definition of HEPA Vacuum. In addition, HEPA vacuums are designed to be operated for either "dry" or both "wet and dry" cleanup of materials. A HEPA vacuum operated contrary to manufacturer's design or recommendations may have its filters damage or compromised. Prior to obtaining a HEPA vacuum, an owner or operator should consult with their vendor to ensure that the proper HEPA vacuum is selected for the housekeeping requirements needed when dealing with solid and liquid metal TACs.

Subparagraph (i)(9)(B) requires the contents of HEPA vacuum intended for disposal to be emptied into closed container while the equipment is inside a spray booth that meets the requirements of subparagraph (d)(1)(A).

#### **Best Management Practices – Subdivision (j)**

PAR 1469.1 includes a new subdivision, (j), for the use of Best Management Practices or BMPs. Best Management Practices prescribe how an owner or operator shall conduct chromate spray coating operations and other ancillary operations to prevent the release or generation of fugitive emissions. BMPs that may require a physical modification at a facility have future compliance dates while other BMPs are effective on the date of rule adoption.

***Operation of Enclosed Spray Booths (j)(1)(A)***

Paragraph (j)(1)(A) requires ingresses and egresses of an enclosed spray booth to be closed during chromate spray coating operations.

***Spray Booth Ventilation (j)(1)(B)***

Beginning July 1, 2022, subparagraph (j)(2)(B) requires facilities to have an automatic system in place to ensure that the spray booth ventilation system is operating prior to conducting chromate spray coating operations. Based on stakeholder comments concerning the complexity of an interlock system, the subparagraph (j)(2)(B) requirement includes automatic systems that ensures the spray booth ventilation system is operational before chromate spraying activities begin. Examples of automatic systems include, but are not limited to, a spray booth light switch or spray gun cradle that activate a ventilation system when spray booth lights are turned on or when a spray gun is removed from the cradle. Another automated system is an interlock that prevents compressed air to the spray gun unless the ventilation system is operating which is required for new spray booths by some fire departments.

***Removing Protective Covers (j)(2)(A)***

Subparagraph (j)(2)(A) is a modification to existing Rule 1469.1 subparagraph (d)(7)(A) procedures for removing protective floor, wall, and exhaust covers inside a spray booth. Subparagraph (j)(2)(A) requires the ventilation system to be operated with doors closed (enclosed booths), and placement of materials intended for disposal into a container before removal from the spray booth.

***Post Spraying Ventilation (j)(2)(B), (C), and (D)***

Subparagraph (j)(2)(B) is a modification to existing Rule 1469.1 subparagraph (d)(1)(C) requirements to operate a spray booth ventilation system after chromate spray coating operations have ceased. Under subparagraph (j)(2)(B), the spray booth ventilation system must be operated for a minimum of three air exchanges within the spray booth or five minutes, whichever is longer after spraying operations or dried chromate coating removal activities have ceased and after protective floor, wall or exhaust covers are removed.

Subparagraph (j)(2)(C) is a new provision which requires an owner or operator of a chromate spraying operation to post the minimum post spraying ventilation time on the spray booth in a location that is clearly visible and accessible to the spray booth operator.

Subparagraph (j)(2)(D) is a modification to existing Rule 1469.1 subparagraph (d)(7)(B) requirement which prohibits the operation of a spray booth ventilation system when filters are being replaced, however, subparagraph (j)(2)(D) is only applicable to the final filters.

***Transfer Efficiency (j)(3)***

Paragraph (j)(3) is a modification to existing Rule 1469.1 paragraph (d)(2) transfer efficiency requirements. Subparagraph (j)(3) maintains requirements to use one for the following methods to apply chromate coatings: high-volume, low pressure (HVLP), electrostatic application, or an alternate application method capable of achieving at least equivalent transfer efficiency as a HVLP spray gun. PAR 1469.1, however, removes references the following application methods which are not subject to the Rule: flow coater, roll coater, dip coater or hand application methods.

***Dried Chromate Coating Removal Activities (j)(4)***

Paragraph (j)(4) is a new provision which requires ingresses and egresses of enclosed spray booths to be closed when dried chromate coating removal activities are conducted in the booth.

***Demasking Activities (j)(5)***

Paragraph (j)(5) is a new provision which is applicable to demasking activities conducted outside of an enclosed spray booth or a permanent total enclosure. Specifically, paragraph (j)(5) prohibits use of compressed air to clean workpieces on tables or other surface areas where demasking occurs.

***Workpiece Support Equipment (j)(6) and (j)(7)***

Beginning July 1, 2021, paragraphs (j)(6) and (j)(7) are applicable to workpiece support equipment used during chromate spraying operations that are taken out of a spray booth or a permanent total enclosure. Paragraph (j)(6) requires facilities to establish and clearly mark transit paths for this equipment and only transport equipment within identified transit paths. Paragraph (j)(7) requirements are similar but are specific to storage areas used for workpiece support equipment. Housekeeping requirements for identified transit paths and storage areas are included in PAR 1469.1, subdivision (i).

***Visual Inspections (j)(8)***

Paragraph (j)(8) maintains the existing Rule 1469.1 paragraph (k)(1) visual inspection requirements. As with the current Rule 1469.1 provisions, the requirement to conduct a visual inspection of the filter media does not require the removal of equipment as part of the inspection process.

***Personal Protective Equipment (j)(9)***

Paragraph (j)(9) is a new provision which requires removal of personal protective equipment in a manner that minimizes fugitive emissions.

**Pressure Drop Across Filter Media – Subdivision (k)*****Interim Requirements Before January 1, 2023***

Rule 1469.1 currently requires a pressure gauge to be installed and maintained to continuously measure the pressure drop across the filter media of a spray booth, and requires the pressure drop to not exceed a maximum limit as specified in a permit condition or by the manufacturer's recommended operating range if no permit condition limits the pressure drop. This requirement is maintained in paragraph (o)(3), until January 1, 2023.

***Pressure Gauge Requirements, Pressure Drop Limits, and Operational Requirements (k)(1), (k)(2), and (k)(3) After January 1, 2023***

Subparagraph (k)(1)(A) will require facilities on and after January 1, 2023 to monitor pressure drop only across the final stage filter media (HEPA or better filters). In order to meet this requirement, a dedicated pressure gauge will be required for the final stage filter media. While many spray booth permits already require dedicated pressure gauges at their HEPA filters, some permits only include one pressure gauge across all the filter media in the spray booth. Directly measuring the pressure drop of the final stage filters ensures that facilities can monitor the status of those filters, which establishes the highest control efficiency for a spray booth.

Subparagraph (k)(1)(B) will require the pressure drop to be maintained at or below the maximum pressure drop specified in a permit, or the filter manufacturer’s recommended maximum pressure drop, whichever is lower. The maximum pressure drop limit across the final stage filter media may change depending upon the specifications of the installed filter media, and may differ from the fixed maximum limit specified in a permit. By using the lower of the two values, facilities can ensure that the maximum pressure drop does not exceed the filter media’s capacity.

Paragraph (k)(2) requires that the pressure drop across the final stage filter media not fall below a specified minimum limit as established by Table 4 of PAR 1469.1 (shown below as Table 7).

**Table 7 – Minimum Pressure Drop Across Final Stage Filters**

<b>Availability of Minimum Pressure Drop Information</b>	<b>Minimum Pressure Drop Requirement</b>	<b>Effective Date</b>
Specified in a South Coast AQMD permit	Specified in a South Coast AQMD permit	[Date of Rule Adoption]
Not specified in South Coast AQMD permit	Measure pressure drop to the nearest tenth of an inch of water column to establish the minimum pressure drop across existing final stage filter media in place before January 1, 2023	January 1, 2023 until new final stage filter media replacement
	Measure pressure drop to the nearest tenth of an inch of water column to establish the minimum pressure drop across new final stage filter media replaced after January 1, 2023	At the time of new final stage filter media installation

If the minimum limit is specified in a spray booth permit, the facility must already comply with this permit condition. If a minimum limit is not specified on the permit, the facility must establish a minimum limit by measuring the pressure drop to the nearest tenth of an inch of water column. This can be done by taking a reading of the dedicated pressure gauge required in subparagraph (k)(1)(A). As of January 1, 2023, the minimum limit would be the measured pressure drop at the existing filters; facilities would not be required to replace the filters by January 1, 2023. When the filters are deemed to need replacing, the new minimum limit would then be the measured pressure drop across the new final stage filters media. Pressure drop measurements that are below the minimum limit would indicate that the flow of air is somehow bypassing the filter media before entering the exhaust duct.

Paragraph (k)(3) requires a spray booth to cease operating if the pressure drop across the filter media is above the maximum pressure drop limit or below the minimum pressure drop limit. Before January 1, 2023, the maximum pressure drop limit is established for the filter media pursuant to paragraph (o)(3). Beginning January 1, 2023, for the final stage filter, the maximum pressure drop limit is established pursuant to subparagraph (k)(1)(A) and the minimum pressure drop is established by Table 4 – minimum Pressure Drop Across Final Stage Filters.

***Filter Specification Sheets – Paragraph (k)(4)***

A facility is required to maintain onsite the technical specification sheets for the final stage filter media installed in a spray booth, as well as any minimum pressure drop required to be established

by the facility (if not specified by a permit condition). The documentation should be made available to South Coast AQMD staff upon request.

***Recording the Pressure Drop – Paragraph (k)(5)***

Paragraph (k)(5) requires the pressure drop across the filter media to be recorded once a day on days where a spray booth is operated for chromate spraying operations or dried chromate coating removal activities.

***Data Acquisition System Alternative – Paragraph (k)(6)***

PAR 1469.1 allows a facility to install a data acquisition system (DAS), equipped with an audible alarm, to continuously record the pressure drop as an alternative to manually recording pressure drop as required by paragraph (k)(5). Specifically, under paragraph (k)(6), the DAS and alarm system must be maintained according to the manufacturer's specifications. Subparagraph (k)(6)(A) requires the DAS to record the pressure drop at least once every sixty (60) minutes when chromate spraying operations or dried chromate coating removal activities are conducted in the spray booth. Subparagraph (k)(6)(B) has requirements for the format of the data file and the information generated by the DAS. Subparagraph (k)(6)(C) requires the alarm to alert the operator when the pressure drop exceeds the maximum limit or falls below the minimum limit.

**Spray Booth Exhaust Duct Cleaning Requirements – Subdivision (l)**

HEPA or better spray booth filtration is highly effective, however, staff observations and testing have found materials containing chromates inside exhaust ducts downstream of final filters and on roofs at Rule 1469.1 facilities. Based on stakeholder comments on the need for duct cleaning at all facilities, PAR 1469.1 duct cleaning provisions are based on an evaluation of site-specific conditions.

***Duct Inspections (l)(1)***

When the final stage filters are replaced, paragraph (l)(1) requires a visual inspection of the exhaust duct downstream of the filters for the presence of overspray or dried chromate coating material that may contain chromium. If any chromate coatings have been sprayed in the booth at any time after the ducts have been installed, the overspray or dried coating material may contain chromium.

***Duct Cleaning (l)(2)***

If material is observed during a visual inspection, paragraph (l)(2) provides facilities with two compliance options. Subparagraph (l)(2)(A) specifies facilities can remove the material observed during a visual inspection using an approved cleaning method. Alternatively, subparagraph (l)(2)(B) allows a facility to first analyze the material for the presence of chromates. If chromates are documented downstream of the final filter, subparagraph (l)(2)(B) requires removal of accumulated materials within seven days of receiving positive test results using an approved cleaning method.

***Notification of Duct Cleaning (l)(3)***

Paragraph (l)(3) requires notification to South Coast AQMD at least 72 hours before conducting duct cleaning required by paragraph (l)(2).

**Recordkeeping Requirements – Subdivision (m)**

Current Rule 1469.1 includes recordkeeping requirements. PAR 1469.1 maintains these requirements, however, since additional requirements are added, such as additional parameter monitoring, there are additional recordkeeping provisions. PAR 1469.1 recordkeeping provisions are consistent with those contained in other recently adopted and amended toxic metal particulate rules.

***Chromate Usage (m)(1)***

Paragraph (m)(1) maintains the existing requirement in Rule 1469.1 paragraph (j)(1) for facilities to maintain records of chromate coatings. These requirements include purchase records, Safety Data Sheets (previously referred to as Material Safety Data Sheets or Technical Data Sheets), daily usage records, and application methods for chromate coatings.

***Housekeeping and Best Management Practices (m)(2)***

Paragraph (j)(1) of existing Rule 1469.1 requires facilities to maintain records to demonstrate compliance with subdivision (d) requirements, which includes housekeeping. PAR 1469.1 subparagraph (m)(2)(A) maintains this requirement for housekeeping requirements in subdivision (i) and paragraph (o)(2) but also requires recordkeeping to demonstrate compliance with best management practices in subdivision (j). Compliance with these recordkeeping requirements includes a demonstration that periodic activities, such as weekly cleaning requirements, are being conducted. A checklist would satisfy this requirement.

Subparagraph (m)(2)(B) requires facilities to maintain records of the visual inspections required under paragraph (j)(8).

***Monitoring Records (m)(3)***

Subparagraph (m)(3)(A) requires facilities to maintain records of capture efficiency demonstrations such as date/time of demonstration, booth identification, description of equipment used/calibration dates, and results. As previously mentioned, PAR 1469.1 Appendix 1 includes the procedures facilities must use when conducting inward face air velocity measurements.

Subparagraph (m)(3)(B) maintains the existing Rule 1469.1 recordkeeping provisions contained in subparagraph (j)(2)(D), however, also specifies data acquisition system or DAS recordkeeping for facilities selecting that compliance option.

As mentioned, some permits for Rule 1469.1 spray booths establish a minimum pressure differential for the final stage filter. Beginning January 1, 2023, PAR 1469.1 requires facilities that do not have minimum pressure drop value on permits to establish a minimum pressure drop for final stage filters. Subparagraph (m)(3)(C) adds a new recordkeeping requirement for facilities to maintain records of spray booth final stage filter replacement and the established minimum pressure drop required under PAR 1469.1 paragraph (k)(2).

Subparagraph (m)(3)(D) requires facilities to maintain records of the exhaust duct visual inspections required under paragraph (l)(1), including a photograph of the spray booth exhaust duct when the visual inspection is conducted.

***Records Retention (m)(4)***

Paragraph (m)(4) modifies the existing Rule 1469.1 record retention requirements contained in subparagraph (j)(2)(C). Specifically, PAR 1469.1 subparagraph (m)(4)(A) maintains the

requirement for records to be maintained for three years but clarifies that at a minimum, the most recent two years of records must be maintained onsite and that records kept offsite must be made available within one week of the request. Subparagraph (m)(4)(B) is a new provision which becomes effective two years after adoption of PAR 1469.1. Under subparagraph (m)(4)(B), the records retention requirement is increased to five years which is consistent with other South Coast AQMD regulations. The delayed effective date allows facilities to accumulate the necessary records before being subject to the requirement to have five years of records. The requirement to keep the most recent two years of records onsite with other records available within one week of a request is also consistent with other South Coast AQMD regulations.

### **Prohibitions – Subdivision (n)**

PAR 1469.1 adds subdivision (n) that prohibits construction or installation of new open face spray booths or outdoor enclosed spray booths for chromate spray coating operations.

#### ***Open Face Spray Booths (n)(1)***

Under paragraph (n)(1), a new open face spray booth for chromate spray coating operations will be prohibited as of the date of PAR 1469.1 adoption unless the open face spray booth is located with a permanent total enclosure vented to air pollution control equipment that meets the HEPA or better filtration requirements of subparagraph (d)(1)(A). Paragraph (c)(21) includes a definition of a permanent total enclosure.

#### ***Outdoor Enclosed Spray Booths (n)(2)***

Paragraph (n)(2) adds a prohibition on the installation or construction of a new spray booth for chromate spray coating operations that is not located within a building enclosure.

### **Interim Requirements for Facilities – Subdivision (o)**

As discussed in prior subdivisions, many of the existing rule requirements from Rule 1469.1 have been re-organized in PAR 1469.1. Some requirements have a delayed implementation date before the owner or operator is required to comply with the new requirements. To avoid a potential regulatory gap and backsliding of existing requirements until the future implementation date, subdivision (o) incorporates prior inward face air velocity, housekeeping, and pressure drop monitoring requirements from existing Rule 1469.1. These existing requirements are effective until either January 1, 2022 (housekeeping), January 1, 2026 (inward face air velocity) and January 1, 2023 (pressure drop) and a description of the requirements is included under the following Chapter 2 headings: Spray Booth Capture Efficiency - (g), Housekeeping - (i), and Pressure Drop Across Filter Media - (k).

### **Exemptions – Subdivision (p)**

Existing Rule 1469.1 includes exemptions for touch up and repair activities in subdivision (h). Under subdivision (p), PAR 1469.1 modifies the existing touch up and repair exemption and adds exemptions for thermal spraying and non-spraying application methods to clarify rule applicability.

#### ***Thermal Spraying (p)(1)***

The applicability subdivision, (b), of Rule 1469.1 currently specifies that thermal spraying operations are not subject to the rule. To be consistent with other South Coast AQMD rules, this

provision has been moved from the applicability subdivision to the exemptions subdivision. Thermal spraying activities are subject to other regulatory requirements including the CARB ATCM.

#### ***Non-Spraying Application Methods (p)(2)***

Paragraph (p)(2) has been added to exempt chromate coatings applied by flow coater, roll coater, dip coater, or hand application methods from the control device requirements of paragraph (d)(1)(A) and the spray booth operation provisions of paragraph (d)(3).

#### ***Touch Up and Repair Operations (p)(3)***

Paragraph (h)(1) of existing Rule 1469.1 includes an exemption for touch up and repair activities conducted inside a building provided the emissions and cancer risk are included in an approved Health Risk Assessment that meets the applicable risk limits depending on the distance to the receptor and the type of receptor. Paragraph (h)(2) of existing Rule 1469.1 exempts touch up and repair activities from spray booth operation and transfer efficiency requirements provided emissions are calculated in an approved compliance plan and total facility-wide from spraying operations are demonstrated to be less than the applicable risk limits depending on the distance to the receptor and the type of receptor. PAR 1469.1 paragraph (p)(3) modifies the current provisions to clarify that for touch up and repair to be exempted, emissions are required to be calculated and included in an approved facility-wide health risk assessment that limits the cancer risk to 10 in a million.

## **APPENDICES**

### **Appendix 1 - Inward Face Air Velocity Measurement Procedures**

Existing Rule 1469.1 includes a performance standard for inward face velocity but does not reference a test method or require facilities to conduct testing. Subdivision (g) of PAR 1469.1 includes requirements for facilities to conduct periodic tests to demonstrate that spray booths meet the applicable average and minimum velocities in Table 1, as determined by the procedures specified in Appendix 1.

Appendix 1 establishes minimum requirements for test equipment and spray booth conditions as well as procedures for taking and recording measurements.

### **Appendix 2 - Rule 1469.1 Compliance Plans for Alternate Point Source Requirements**

As described in Chapter 1, existing Rule 1469.1 includes emission limit and a facility-wide risk compliance options as an alternative to the requirement for facilities to install and use HEPA or better filtration. PAR 1469.1 removes the emission limit and facility wide compliance options for new facilities but there are three facilities that currently utilize this compliance alternative. PAR 1469.1, subdivision (e) includes the timeframe for these facilities to upgrade equipment and requires these facilities to continue to be subject to existing requirements such as any conditions included in an approved compliance plan. Required elements for a compliance plan were included in paragraph (d)(4) of existing Rule 1469.1 and have been incorporated as Appendix 2 in PAR 1469.1 with updated rule references.

**ATTACHMENTS**

Existing Rule 1469.1 included Appendix 1 - Emission Calculation Method and Appendix 2 - Distance-Adjusted Annual Emission Levels For Facilities Located More Than 25 Meters (82 ft) from a Residence or Sensitive Receptor. Appendix 2 Compliance Plan provisions includes references to the previous Rule 1469.1 appendices. Accordingly, PAR 1469.1 includes relevant portions of these appendices which have been renamed as Attachment 1 - Emission Calculation Method and Attachment 2 - Measuring Distance to a Sensitive Receptor.

**CHAPTER 4 – IMPACT ASSESSMENT**

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**AFFECTED SOURCES**

Chromate coatings are primarily applied onto metal substrates as an anti-corrosion agent in a variety of industries. PAR 1469.1 applies to those facilities that apply chromate coatings via a spraying method; facilities that do not have chromate coating spraying operations are not subject to this rule. There are approximately 115 facilities expected to be impacted by PAR 1469.1. Table 8 provides the number of facilities by North American Industry Classification System (NAICS) code. The facilities were identified by reviewing South Coast AQMD spray booth permits and supplemented by Internet searches and trade association contacts.

**Table 8 – Facility Categories**

NAICS	Facility Type	Number of Facilities
325510	Paint and Coating Manufacturing	1
325998	All Other Miscellaneous Chemical Product and Preparation Manufacturing	2
331524	Aluminum Foundries (except Die-Casting)	1
332119	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	1
332313	Plate Work Manufacturing	1
332322	Sheet Metal Work Manufacturing	3
332510	Hardware Manufacturing	5
332722	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	5
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	10
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	32
332911	Industrial Valve Manufacturing	1
334290	Other Communications Equipment Manufacturing	1
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	1
334519	Other Measuring and Controlling Device Manufacturing	1
336320	Motor Vehicle Electrical and Electronic Equipment Manufacturing	1
336411	Aircraft Manufacturing	5
336412	Aircraft Engine and Engine Parts Manufacturing	5
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	11
336419	Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	1
423510	Metal Service Centers and Other Metal Merchant Wholesalers	1
423610	Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers	1
423860	Transportation Equipment and Supplies (except Motor Vehicle) Merchant Wholesalers	5
423990	Other Miscellaneous Durable Goods Merchant Wholesalers	1
424690	Other Chemical and Allied Products Merchant Wholesalers	2
541990	All Other Professional, Scientific, and Technical Services	1
811121	Automotive Body, Paint, and Interior Repair and Maintenance	1
811219	Other Electronic and Precision Equipment Repair and Maintenance	1
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	2

NAICS	Facility Type	Number of Facilities
921190	Other General Government Support	1
927110	Space Research and Technology	1
999990	#N/A	1
999999	#N/A	1
Unknown	#N/A	5

The vast majority of spray booths at these facilities are equipped with HEPA filters or better, complying with Option B. Eight (8) spray booths located at three (3) facilities currently use HRAs to comply with the facility-wide cancer risk limits in Option C. There are no facilities complying with Option A. PAR 1469.1 would require these three facilities to submit permit applications upgrade spray booths where chromate spraying operations are conducted to be equipped with HEPA filters or better.

### **EMISSIONS IMPACT**

PAR 1469.1 will reduce both point source and fugitive emissions of hexavalent chromium. Point source controls will reduce hexavalent chromium emissions from chromate spray coating operations and dried chromate coating removal activities through use of HEPA or better filtration. PAR 1469.1 includes enhanced parameter monitoring to ensure the air pollution control systems are operating as intended. Housekeeping, building enclosure and best management practices will reduce fugitive emissions from Rule 1469.1 facilities. Fugitive emissions are difficult to quantify but have been shown to be a contributing factor to ambient toxic air contaminant concentrations.

### **CALIFORNIA ENVIRONMENTAL QUALITY ACT**

Pursuant to the California Environmental Quality Act (CEQA) and South Coast AQMD's certified regulatory program (Public Resources Code Section 21080.5, CEQA Guidelines Section 15251(l) and South Coast AQMD Rule 110), the South Coast AQMD, as lead agency, is reviewing the proposed project to determine if it will result in any potential adverse environmental impacts. Appropriate CEQA documentation will be prepared based on the analysis.

### **SOCIOECONOMIC ASSESSMENT**

A socioeconomic impact assessment will be conducted and released for public review and comment at least 30 days prior to the South Coast AQMD Governing Board Hearing which is anticipated to be heard on May 7, 2021.

### **DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727**

#### **Requirements to Make Findings**

California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report.

**Necessity**

PAR 1469.1 is needed to further reduce emissions of hexavalent chromium from facilities conducting chromate spray coating and related operations.

**Authority**

The South Coast AQMD Governing Board has authority to adopt PAR 1469.1 pursuant to the California Health and Safety Code Sections 39002, 39650 et. seq., 40000, 40440, 40441, 40702, 40725 through 40728, 41508, and 41700.

**Clarity**

PAR 1426 is written or displayed so that its meaning can be easily understood by the persons directly affected by it.

**Consistency**

PAR 1469.1 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

**Non-Duplication**

PAR 1469.1 will not impose the same requirements as or in conflict with any existing state or federal regulations. The proposed amended rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD.

**Reference**

By adopting PAR 1469.1, the South Coast AQMD Governing Board will be implementing, interpreting or making specific the provisions of the California Health and Safety Code Section 41700 (nuisance), and Federal Clean Air Act Section 112 (Hazardous Air Pollutants) and Section 116 (Retention of State authority).

**COMPARATIVE ANALYSIS**

California Health and Safety Code Section 40727.2 requires a comparative analysis of the proposed rule requirements with those of any Federal or South Coast AQMD rules and regulations applicable to the same equipment or source category. The comparative analysis will be conducted and released in the draft staff report at least 30 days prior to the South Coast AQMD Governing Board Hearing on PAR 1469.1, which is anticipated to be held on May 7, 2021.