

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

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## **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 includes requirements for chromate spraying facilities and includes requirements for related operations at those facilities, 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 PAR 1469.1 also updates requirements consistent with current toxic metal rules and removes outdated definitions and provisions.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. As discussed later in this report, PAR 1469.1 is proposing to remove Option A.

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 nearly all 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 approved health risk assessment (HRA), approved Risk Reduction Plan, or enforceable permit

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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/cmr/2015guidancemanual.pdf>

conditions. There are two large aerospace facilities currently meeting the requirements of Rule 1469.1 under Option C. Each facility has an approved health risk assessment, one approved in 2000 and one approved in 2015 using the revised 2015 OEHHA health risk guidance.

### **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 a spray booth ventilation system's operation 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), 40 CFR Part 63, Subpart GG<sup>2</sup>. The Aerospace NESHAP was promulgated in September 1995 and last amended in December 2015, 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 Aerospace 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 waterwash system before exhausting it to the atmosphere. When spraying coatings containing chromates, the Aerospace NESHAP requires that the filters meet a control efficiency of at least 95%.

### 6H NESHAP

The NESHAP for Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources, 40 CFR Part 63, Subpart HHHHHH (6H NESHAP)<sup>3</sup> regulates the spraying of chromate coatings on metal and plastic substrates at facilities that are not major source facilities. The 6H NESHAP was promulgated in January 2008 and, in part, applies to facilities that spray coatings containing chromium and other inorganic hazardous air pollutants. The regulation requires spraying operations to be conducted in spray booths or preparation stations equipped with filters that achieve at least a 98% control efficiency, or in waterwash booths that are maintained according to manufacturer's specifications and consistent with good air pollution control practices. The 6H NESHAP also requires painters to have completed training in techniques to minimize paint overspray and has notification and recordkeeping requirements.

### 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

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<sup>2</sup> United States Environmental Protection Agency. *Subpart GG—Aerospace Manufacturing and Rework Facilities: National Emission Standards for Hazardous Air Pollutants*. (2015). Retrieved 18 March 2021, from <https://www.govinfo.gov/content/pkg/FR-2015-12-07/pdf/2015-30356.pdf>.

<sup>3</sup> United States Environmental Protection Agency. *Subpart HHHHHH—National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources*. (2008). Retrieved 23 March 2021, from <https://www.govinfo.gov/content/pkg/FR-2008-01-09/pdf/E7-24718.pdf>.

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, a second group of compounds was added, 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 the approval 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>4</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>5</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

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<sup>4</sup> European Chemicals Agency. Retrieved February 11, 2021 from <https://echa.europa.eu/>

<sup>5</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>.

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 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, 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 on alternative solutions.<sup>6</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, nearly all facilities presently comply with the existing Rule 1469.1 control device option (Option B). No facilities are complying with Option A. Two facilities comply with Option C using 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 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. As discussed later in this report, PAR 1469.1 removes the Option A and Option C compliance options and preserves the control device requirement (Option B) for all new or modified facilities.

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

Spray booth collection 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

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<sup>6</sup> Advanced Surface Engineering Technologies for a Sustainable Defense. Retrieved February 11, 2021 from <https://www.serdp-estcp.org/asetdefense>.

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 using a specific test method can be another technique to ensure the air pollution control device is properly operating.

### Minimal 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, 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. 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 collected; however, those particles can 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, January 13, 2021, and March 10, 2021. A Public Workshop was held on 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

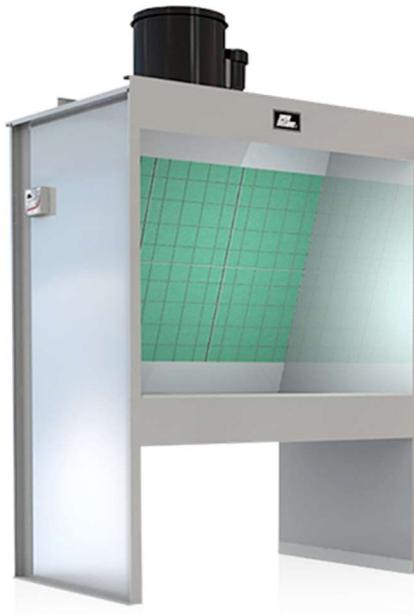
A spray booth is a power-ventilated structure used to control and capture overspray, vapor, and residue. Activities are conducted within a spray enclosure vented to a filtration system to capture particles before the air exits through the spray booth exhaust ducting. The negative airflow through the 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>7</sup>****Figure 4 – Examples of Enclosed Bench Spray Booths**

<sup>7</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 before 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**



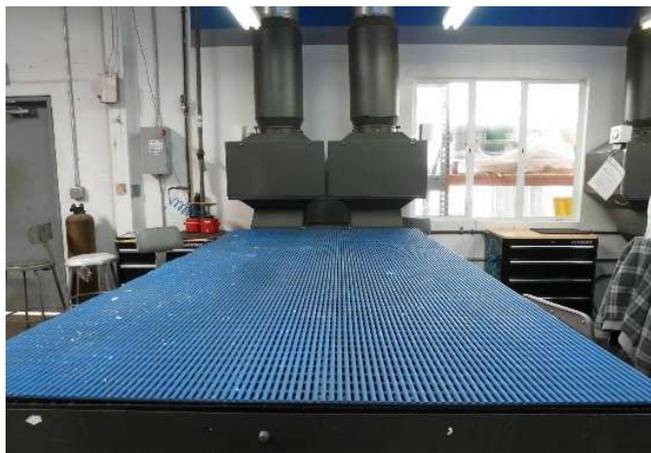
### Workpiece Support Equipment

Racks, stands, and other equipment used to hold or support workpieces during spraying and 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: collection efficiency and control efficiency.

### Collection Efficiency

Collection 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 collection efficiency can lead to increased fugitive emissions. An indicator of collection 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 collection 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>8</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 the 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

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<sup>8</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).

Coast AQMD Permit to Operate may also specify the maximum and minimum pressure drop 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 issues 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 present in a spray booth while chromate coatings are being sprayed may become coated with overspray. Over time, 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**

Based on permitting data, there are approximately 115 facilities expected to be impacted by PAR 1469.1, with 231 spray booths. Of those spray booths, 100 are open face non-bench spray booths, 66 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. With the exception of facilities that have complied with point source requirements under Option C, all spray booths permitted for chromate spray coating operations are equipped with HEPA or better filtration. Four spray booths at two facilities that comply with the Rule 1469.1 Option C facility-wide cancer risk limits are not required to be equipped with HEPA filters.

### **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 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)**

The applicability of PAR 1469.1 remains unchanged in that the rule applies to facilities that spray chromate coatings. However, the language was amended to reflect the phrase “chromate coatings,” which refers to coatings containing chromates, the form in which hexavalent chromium is found in paint. The thermal spraying exemption is moved to Exemptions in subdivision (p).

### **Definitions – Subdivision (c)**

PAR 1469.1 includes definitions for specific terms. Several 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>• Electrostatic Application</li> <li>• Hand Application Method</li> <li>• High Efficiency Particulate Air Filter</li> <li>• High-Volume, Low-Pressure Spray</li> <li>• Open Face Spray Booth</li> <li>• Overspray</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 Method</li> <li>• Bench Spray Booth</li> <li>• Building Enclosure</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 School</li> <li>• Existing Source or Source</li> <li>• New Source</li> <li>• Primer</li> <li>• Receptor</li> <li>• Residential Receptor</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)(d)(1)(C) and subdivision (e)
Compliance Plan Provisions*	(d)(4) to (d)(6)	Removed	-
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. PAR 1469.1 will remove Option A and requires all new facilities comply with current Rule 1469.1 air pollution control device requirements. PAR 1469.1 also includes provisions for the two facilities currently complying under Option C to continue to be subject to existing requirements until air pollution control device requirements can be met or the facility submits the necessary permit modifications to limit chromate emissions to what was analyzed in the approved HRA that was performed using the revised 2015 OEHHA health risk guidance. 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 HEPA filters or 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. However, this description was intended to describe HEPA filters, but it does not allow other control technologies that surpass HEPA, such as ULPA filters. Accordingly, the control device description in subparagraph (d)(1)(A) is proposed to be modified to allow the 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 earlier of the dates specified in subparagraph (d)(2)(B). As mentioned, there are two facilities that have an approved Compliance Plan or approved Health Risk Assessment.

Subparagraph (d)(1)(C) provides another compliance option if an existing facility has an approved Health Risk Assessment based on the revised 2015 OEHHA health risk guidance. Requirements for a facility to comply with subparagraph (d)(1)(C) are described under the subdivision (e).

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

Paragraph (d)(2) requires 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 two 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, whichever date is earlier. Beginning January 1, 2026, a spray booth that meets the requirements of paragraphs (e)(1) and (e)(2) 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 adequately vented. Subparagraph (d)(3)(A) requires operators to ensure visible emissions do not exit the spray booth.

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

Subparagraph (d)(3)(C) establishes requirements for spray booth air flow. Specifically, clause (d)(3)(C)(i) 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 before January 1, 2026. Beginning January 1, 2026, clause (d)(3)(C)(ii) requires the applicable spray

booth measurement or PTE demonstration requirements of subdivision (g) to be met. 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 and are currently in compliance with Rule 1469.1 using those options.

Paragraphs (e)(1) and (e)(2) specify requirements for facilities while they 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. 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.

Paragraphs (e)(3), (e)(4), and (e)(5) provide another compliance path if the approved health risk assessment was prepared using the revised 2015 OEHHA health risk guidance. Under paragraph (e)(3), the facility is required to submit a complete permit application by January 1, 2023, to modify permits for spray booths used to conduct chromate spraying operations. Paragraph (d)(3) requires the permit to operate be amended to include: 1) a limit on the annual chromate emissions at or below the amount evaluated in the approved health risk assessment and 2) require the use of a filter that is equal to or greater than the filter efficiency evaluated in the approved health risk assessment.

Paragraph (e)(4) specifies the requirements if a facility receives a written notification that the chromate emissions limit established under subparagraph (e)(3)(A) has been exceeded. Under subparagraph (e)(4)(A), a complete permit application to upgrade the spray booth to HEPA or better filtration is required to be submitted within six months of receipt of the written notification pursuant to paragraph (e)(4). Subparagraph (e)(4)(B) further requires the spray booth modification to HEPA or better filtration be completed within 18 months after a Permit to Construct has been issued or 36 months after the date of the written notification, whichever date is earlier.

Paragraph (e)(5) establishes requirements for duct cleaning before January 1, 2023, for a facility accepting permit conditions under paragraph (e)(3). Subparagraph (e)(5)(A) requires the spray booth exhaust duct to be cleaned to remove overspray and dried coatings using an approved cleaning method. Subparagraph (e)(5)(B) requires the inspection of associated exterior surfaces of the spray booth exhaust duct, and if any overspray or dried coating materials are found, all such overspray or dried coating materials must be removed using approved cleaning methods. Subparagraph (e)(5)(C) requires a notification to the Executive Officer at least 72 hours prior to conducting cleaning under subparagraphs (e)(5)(A) and (e)(5)(B).

**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. Paragraph (c)(9) defines dried chromate coating removal activity as an activity whereby chromate coatings on workpieces are removed thorough physical or mechanical means, such as buffing, scuffing, sanding, or grinding. For the purposes of PAR 1469.1, the definition of dried chromate coating removal activity does not include demasking.

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

Paragraph (f)(1) requirements are effective beginning January 1, 2026, or the date specified in subparagraph (f)(2)(B). Specifically, subparagraph (f)(1)(A) requires dried chromate coating removal activities to be vented to a spray booth that meets the requirements of paragraph (d)(1). This includes spray booths equipped with HEPA or better filters and spray booths that meet the alternate point source requirements in subdivision (e). Subparagraph (f)(1)(B) provides an option that dried chromate coating removal activities can be vented to a control device that is equipped with HEPA or better filters, provided the control devices are permitted for dried chromate coating removal, and are operated under a South Coast AQMD permit. Control device examples include a downdraft table or a sanding 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 clause (f)(1)(B)(i) 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 clause (f)(1)(B)(i) within 18 months after the Permit to Construct has been issued by South Coast AQMD or by January 1, 2026, whichever date is earlier.

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

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

**Spray Booth 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).

***Air Velocity or PTE Demonstration Requirements (g)(1)***

PAR 1469.1 defines a spray booth as an enclosure with walls and an impermeable ceiling used to contain and collect overspray from the application of chromate coatings. The amendments establish new air velocity or PTE demonstration 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 the owner or operator to demonstrate that a spray booth meets PAR 1469.1 air velocity or PTE demonstration requirements no later than January 1, 2026, or the date specified in subparagraph (g)(2)(B). As described below, paragraph (g)(2) provides a compliance pathway that allows an owner or operator that cannot meet the PAR 1469.1 air velocity or PTE demonstration requirements to submit a permit application to modify the spray booth equipment.

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. Subparagraph (g)(1)(B) provides an alternative to subparagraph (d)(1)(A) that allows an owner or operator to demonstrate that the spray booth meets the criteria of a permanent total enclosure (PTE) based on U.S. EPA Method 204.

**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 be conducted using an anemometer with an accuracy within +/- 10 percent of full scale and operated and calibrated according to 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.

As mentioned, subparagraph (g)(1)(B) provides another pathway for facilities to demonstrate that a spray booth meets the spray booth requirements 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. 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 Air Velocity or PTE Demonstration Requirements (g)(2)***

PAR 1469.1 requires facilities to demonstrate compliance with the spray booth air velocity or PTE demonstration requirements in paragraph (g)(1) no later than January 1, 2026. If a facility determines that a spray booth will not be able to meet the PAR 1469.1 spray booth requirements, paragraph (g)(2) provides a compliance pathway for facilities to continue to operate the spray booth provided a permit application is submitted to modify the spray booth to meet the PAR 1469.1 air velocity or PTE demonstration requirements. Specifically, under subparagraph (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 date is earlier. 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 air velocity or PTE demonstration requirements.

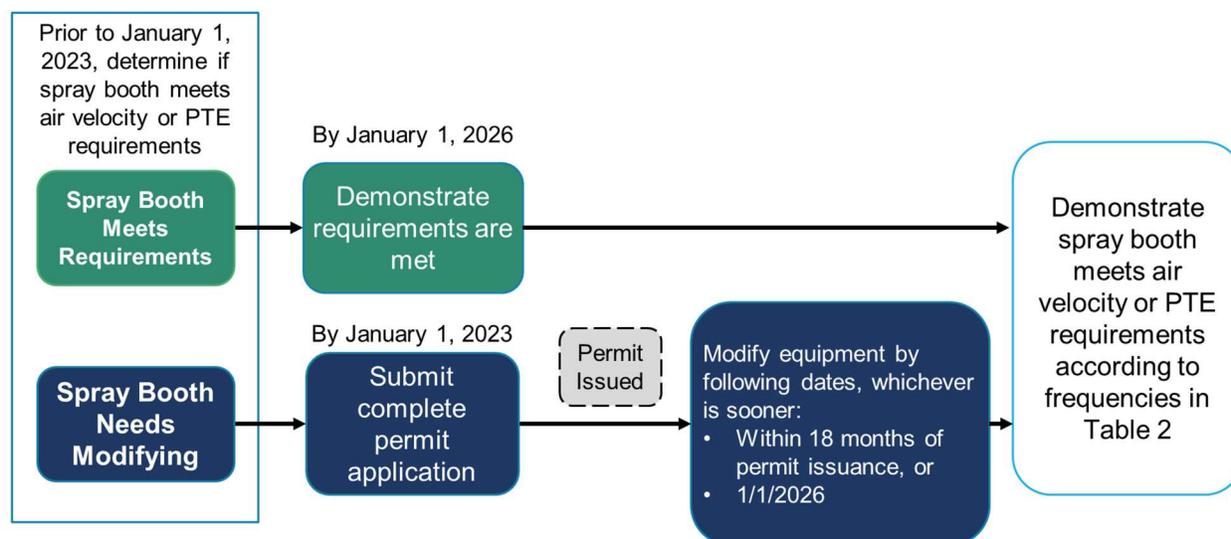
***Air Velocity or PTE Demonstration Compliance after January 1, 2026 (g)(3)***

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 measurement or demonstration frequency specified in PAR 1469.1 Table 2 (shown below as Table 5).

**Table 5 – Measurement or Demonstration Frequency**

<b>Spray Booth Type</b>	<b>Frequency</b>
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 document that the air velocity or PTE demonstration requirements are met at least once every 12 calendar months. The frequency for open face booths is a minimum of at least once every six calendar months. For the purposes of PAR 1469.1, air velocity measurements or PTE demonstrations can occur any day within the applicable calendar month. Figure 7 provides an overview of the air velocity measurement or PTE demonstration schedule.

**Figure 7 – Schedule For Air Velocity Measurement or PTE Demonstration*****Failure to Meet Air Velocity or PTE Demonstration Requirements (g)(4)***

Paragraph (g)(4) establishes procedures for facilities with spray booths that do not meet the air velocity or PTE demonstration 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 the air velocity or PTE demonstration 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.

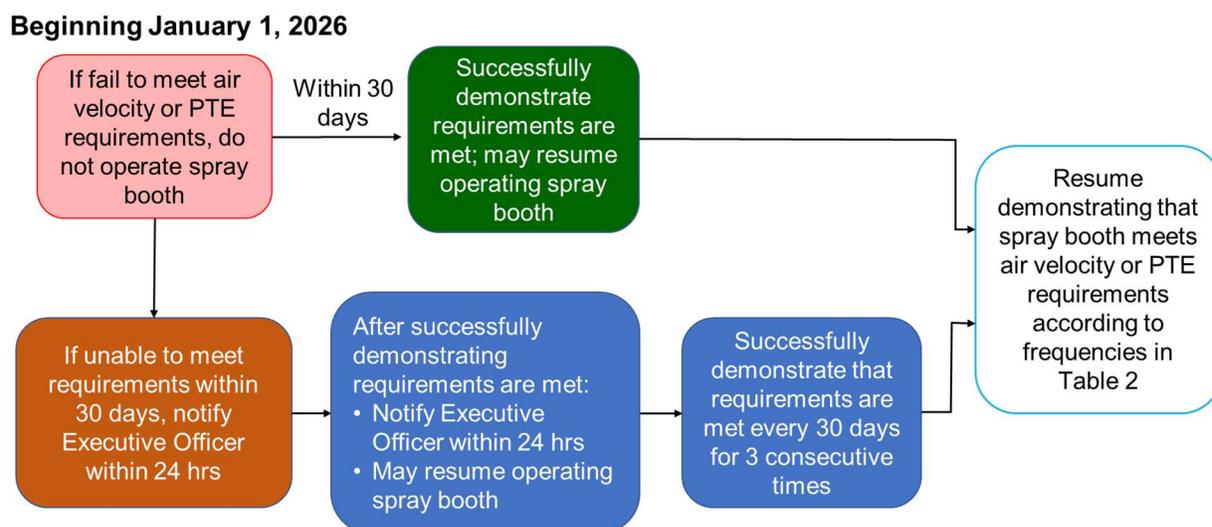
***Air Velocity Measurement or PTE Demonstration Schedule After a Failure (g)(5) and (g)(6)***

Paragraph (g)(5) includes requirements for spray booths that have met the air velocity or PTE demonstration 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 need 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 air velocity measurements or PTE demonstrations (either method is acceptable) 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 to meet the air velocity or PTE demonstration requirements at any time after January 1, 2026, including any of the three consecutive tests conducted pursuant to subparagraph (g)(5)(B) and 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 meet air velocity or PTE demonstration requirements.

**Figure 8 – Schedule After a Failure to Meet Air Velocity or PTE Demonstration Requirements**



### 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, runoff), 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.

Paragraphs (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.

#### ***Housekeeping Requirements Beginning January 1, 2022***

Paragraphs (i)(1) through (i)(9) establish housekeeping requirements that are effective beginning January 1, 2022.

#### ***Cleaning Locations and Frequencies (i)(1) and (i)(2)***

Beginning January 1, 2022, PAR 1469.1 establishes enhanced housekeeping requirements and requires the 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 ingresses and egresses 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/work areas 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 calendar 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 PTE that is vented to HEPA filters or 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. Specifically, Table 3 of PAR 1469.1 requires weekly cleaning for areas outside a PTE and monthly cleanings for identified areas 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 Located Within a Permanent Total Enclosure Vented to an Air Pollution Control System with Filters that Meet the Filter Requirements of Subparagraph (d)(1)(A)</b>	<b>For All Other Areas</b>
(i)(1)(A) and (i)(1)(B)	Once per calendar month, for any month when chromate spraying operations are conducted on one or more days	Once per calendar week, for any week 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 calendar month, for any month when activities are conducted on one or more days	Once per calendar week, for any week when activities are conducted on one or more days
(i)(2)(A) and (i)(2)(B)	Once per calendar month, for any month when workpiece support equipment is moved on one or more days	Once per calendar week, for any week 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 that are not within a building enclosure (i.e., spray booths located outside a building).

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

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

Paragraph (i)(5) requires cleaning of spray booth floors that do not have protective coverings at least once per calendar week. This requirement is also based on the 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 removing and replacing spray booth protective floor or wall coverings at least 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 the current industry practice of using sticky mats or tacky mats that are intended to 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), an 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 or floor covering with an adhesive or tacky surface that removes particles from shoes, wheels, or other objects that travel over the mat or covering.

#### ***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 the 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 of 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 do 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 the 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 a container while the equipment is inside a spray booth that meets the requirements of paragraph (d)(1) and that the container remains closed except when being filled or emptied.

Subparagraph (i)(9)(C) requires the HEPA filter for a HEPA vacuum to be replaced within a spray booth that meets the requirements of paragraph (d)(1) and that the used filter is placed in a closed container before removal from the spray booth.

**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)***

Subparagraph (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, or the date specified in subparagraph (d)(2)(B) for facilities complying with alternate point source requirements of subdivision (e), subparagraph (j)(1)(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)(1)(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. As with other provisions, containers are to remain closed except when being filled or emptied.

***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 that requires an owner or operator of a chromate spraying operation to post the minimum post spraying ventilation time on the spray booth no later than July 1, 2021, 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 that prohibits the operation of a spray booth ventilation system when filters are being removed, replaced, missing, damaged, or improperly seated; however, subparagraph (j)(2)(D) is only applicable to the final stage filters.

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

Paragraph (j)(3) is a modification to existing Rule 1469.1 paragraph (d)(2) transfer efficiency requirements. Paragraph (j)(3) maintains requirements to use one of 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. Paragraph (j)(3) maintains requirements to apply the coatings per equipment manufacturer recommendations, coating manufacturer specifications, or permit conditions. PAR 1469.1 removes references to 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 that requires ingress and egress of enclosed spray booths to be closed and the spray booth to be operated pursuant to the spray booth requirements in paragraph (d)(3) and subdivision (g) and the pressure drop requirements of subdivision (k) when dried chromate coating removal activities are conducted in the booth.

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

Paragraph (j)(5) is a new provision that applies to demasking activities conducted outside of an enclosed spray booth or a PTE that is vented to HEPA filters or 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. Specifically, paragraph (j)(5) prohibits the 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) apply to workpiece support equipment used during chromate spraying operations that are taken out of a spray booth or a PTE that is vented to HEPA filters or 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. Paragraph (j)(6) requires facilities to establish and clearly mark transit paths and work areas for this equipment and only transport equipment within identified transit paths and work areas. Paragraph (j)(7) requirements are similar but are specific to storage areas used for workpiece support equipment. Housekeeping requirements for identified transit paths/work areas 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 that requires the 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. It requires the pressure drop not to 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***

Paragraph (k)(1) requirements are effective on and after January 1, 2023, or the date specified in subparagraph (d)(2)(B) for facilities complying with alternate point source requirements of subdivision (e). Under subparagraph (k)(1)(A) facilities are required to monitor pressure drop only across the final stage filter media. 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 final stage 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. In most cases, the final stage filters will be HEPA or better; however, for a facility complying with the alternate point source requirements under subdivision (e), this provision will apply to the last stage filter in a spray booth which includes filter systems with multiple stages of filters and the filter efficiency for all the stages is certified by the manufacturer.

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. It 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 while the air pollution control system is in operation 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 while the air pollution control system is in operation 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 while the air pollution control system is in operation. 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 filter 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 paragraph (k)(1), 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 and any documentation to support the 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 when 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, and at a frequency of at least every sixty (60) minutes when conducting chromate spraying operations or dried chromate coating removal activities 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 from the spray booth duct using approved cleaning methods. Subparagraph (l)(2)(A) also requires an inspection of associated exterior surfaces of the spray booth duct and removal of all such overspray or dried coatings using an approved cleaning method. 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. Under clauses (l)(2)(A)(i) and (l)(2)(A)(ii), cleaning must be conducted no later than seven days after the observation or, prior to use of the spray booth if the cleaning cannot be conducted within seven days. Alternatively, subparagraph (l)(2)(B) allows a facility to first analyze the material for the presence of chromates. The analysis must be conducted using a laboratory analysis or a commercially available testing procedure that is able to determine the presence of hexavalent chromium. If hexavalent chromium is documented downstream of the final filter, subparagraph (l)(2)(B) requires cleaning of the spray booth duct and an inspection of associated exterior surfaces of the spray booth duct and removal of all such overspray or dried coatings using an approved cleaning method. Clauses (l)(2)(B)(i) and (l)(2)(B)(ii) require cleaning within 14 days or, prior to use of the spray booth if the cleaning cannot be conducted 14 days of the observation. The additional time to conduct duct cleaning, if cleaning is required under subparagraph (l)(2)(B), is to account for the time for a facility to receive results of testing of duct material for the presence of hexavalent chromium. For the purposes of this rule, cleaning of exterior surfaces associated

with spray booth ducts includes roofs and other areas where materials exiting through the exhaust duct can be deposited.

#### ***Required Duct Cleaning (l)(3)***

Paragraph (l)(3) specifies that if a facility receives written notification from the Executive Officer confirming the presence of hexavalent chromium in the spray booth exhaust duct, the facility operator must clean, using approved cleaning methods, the spray booth duct and/or associated exterior surfaces of the spray booth duct prior to use of the booth for chromate spraying operations.

#### ***Notification of Duct Cleaning (l)(4)***

Paragraph (l)(4) requires notification to South Coast AQMD at least 72 hours before conducting cleaning required by paragraphs (l)(2) and (l)(3).

### **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 air velocity measurements or PTE demonstrations such as date/time of the measurement or 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, it 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 and results of the analysis of overspray or dried coatings for the presence of hexavalent chromium if tests are conducted under the provisions of subparagraph (l)(2)(B).

#### ***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 these provisions are effective before July 1, 2023. At a minimum, the most recent two years of records must be maintained on site, and that records kept offsite must be made available within one week of the request. Beginning July 1, 2023, subparagraph (m)(4)(B) is a new provision that increases the record retention requirement 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 that is vented to HEPA filters or 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. Paragraph (c)(20) 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. This prohibition does not apply to spray booths greater than 10,000 square feet installed or constructed after PAR 1469.1 adoption. The square footage threshold was added to clarify that the prohibition of spray booths outside of a building enclosure does not apply to specialty paint hangers intended to paint planes or other large pieces where the entire building is vented to HEPA filters or 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.

### **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). 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 only 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.

### **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 determine 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.

Existing Rule 1469.1 Appendices 1 and 2, which established methods used to demonstrate compliance with existing Option A are no longer applicable and are proposed to be removed.

## **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. The facilities were identified by reviewing South Coast AQMD spray booth permits and supplemented by Internet searches and trade association contacts.

The vast majority of spray booths at these facilities are equipped with HEPA filters or better, complying with Option B. Four (4) spray booths located at two (2) facilities currently use HRAs to comply with the facility-wide cancer risk limits in Option C. There are no facilities complying with Option A. As described in Chapter 3, PAR 1469.1 would require these two facilities to submit permit applications to upgrade spray booths where chromate spraying operations are conducted to be equipped with HEPA filters or accept permit conditions to limit chromate emissions and specify a minimum filter efficiency.

## **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) Guidelines Sections 15002(k) and 15061, the proposed project is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3). A Notice of Exemption will be prepared pursuant to CEQA Guidelines Section 15062. If the proposed project is approved, the Notice of Exemption will be electronically filed with the State Clearinghouse of the Governor's Office of Planning and Research to be posted on their CEQAnet Web Portal, which may be accessed via the following weblink: <https://ceqanet.opr.ca.gov/search/recent>. In addition, the Notice of Exemption will be electronically posted on the South Coast AQMD's webpage which can be accessed via the following weblink: <http://www.aqmd.gov/nav/about/public-notices/ceqa-notices/notices-of-exemption/noe---year-2021>. The electronic filing and posting of the Notice of Exemption is being implemented in accordance with Governor Newsom's Executive Orders N-54-20 and N-80-20 issued on April 22, 2020 and September 23, 2020, respectively, for the State of Emergency in California as a result of the threat of COVID-19.

## **SOCIOECONOMIC ASSESSMENT**

California Health & Safety Code Section 40440.8 requires a socioeconomic impact assessment for proposed and amended rules resulting in significant impacts to air quality or emission limitations.

PAR 1469.1 applies to facilities using chromate coatings that are typically sprayed inside a spray booth vented to a combination of conventional spray booth filters, multi-stage filters, and HEPA filters to control and capture overspray. Potential emissions not only occur during the spraying process, but during buffing, scuffing, sanding, or grinding activities on the workpiece to remove dried excess coating after the curing process. The proposed requirements in PAR 1469.1 with potential costs include:

- New HEPA controls on spray booths;
- New point source requirements (i.e., upgrading of certain booths or permit modification for chromate emissions limits);
- New point source requirements for dried coating removal (i.e., control devices for such activities);
- Air velocity monitoring requirements;
- Requirements for building enclosures;
- Housekeeping and best management practices (BMP) enhancements; and
- Duct cleaning

### **Affected Facilities and Industries**

PAR 1469.1 would affect a total of 231 spray booths across 115 facilities in the South Coast AQMD jurisdiction. Based on a review of spray booth permits, an estimated 72 were enclosed, 108 were open face, and 51 were unconfirmed (20 were assumed enclosed versus 31 open based on the ratio of known enclosed/open booths). PAR 1469.1 primarily affects the electroplating, plating, polishing, anodizing, and coloring industry (NAICS 332813), other aircraft parts and auxiliary equipment manufacturing industry (NAICS 336413), and metal coating, engraving (except jewelry and silverware), and allied services to manufacturers industry (NAICS 332812). Figure 9 shows the locations of the PAR 1469.1 facilities within South Coast AQMD's jurisdiction.

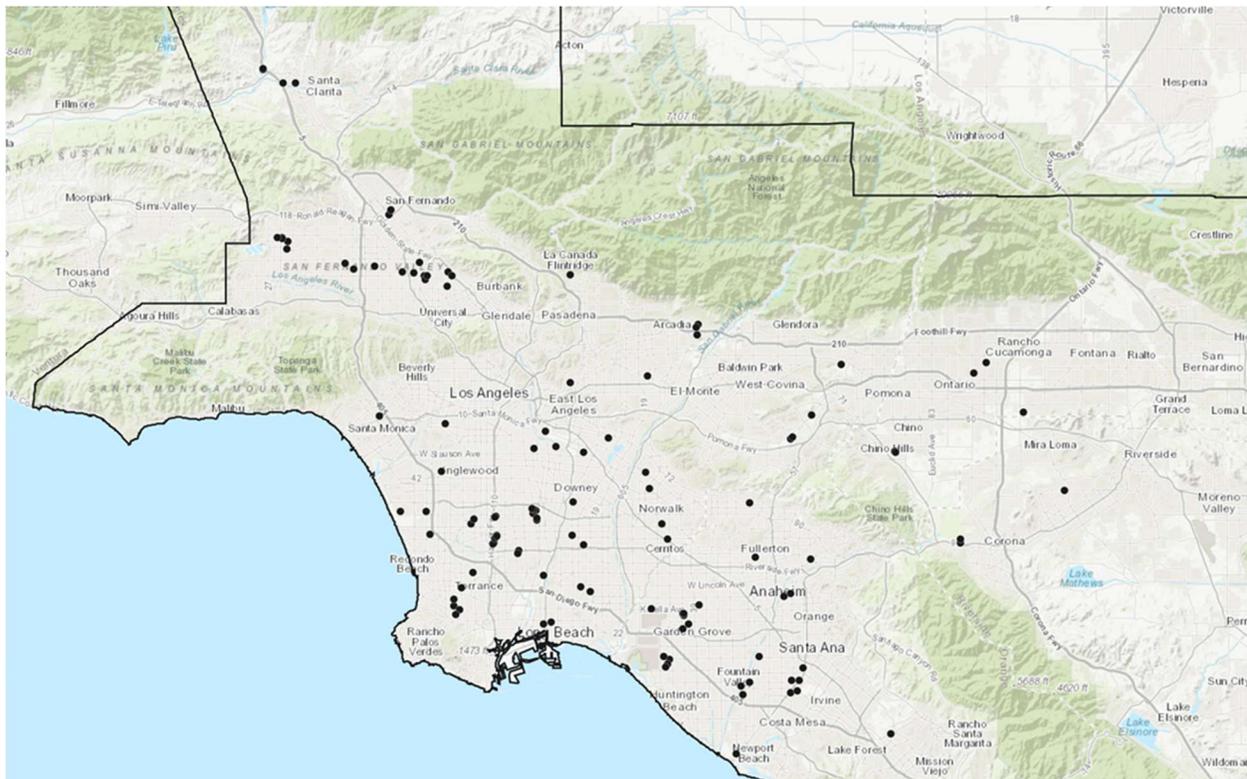
### **Compliance Costs**

For the purpose of the cost impacts analysis of PAR 1469.1, staff used facility survey responses to estimate potential compliance costs for the universe of affected facilities. The facility-specific information provided by facility operators in the written survey establishes a representative cross-section of the affected PAR 1469.1 universe, and costs were estimated accordingly. Of the 115 total estimated potential facilities affected by PAR 1469.1, staff received a 27 percent response rate (31 respondents out of 115 facilities included in the survey).<sup>9</sup> For equipment estimates in which spray booth specifications were not specified (enclosed spray booth, open face spray booth, bench spray booth, etc.), ratios of known facility information were substituted to make the estimates.

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<sup>9</sup> Rule staff sent out a facility survey to a list of approximately 115 potentially affected facilities on January 31, 2020 via email and mail. Staff received 31 completed surveys.

Figure 9 – PAR 1469.1 Facility Locations



*Spray Booth Emission Controls/Modifications (subdivisions (d), (e), and (f))*

As described in Chapter 3, there are two facilities that comply with current Rule 1469.1 health risk assessment provisions and operate spray booths that are not equipped with HEPA filters. PAR 1469.1 would require these facilities to install new HEPA filtration systems (per subdivision (d)) or accept permit conditions to limit chromate emissions and specify a minimum filter efficiency (per subdivision (e)). Based on the staff estimate, one of these facilities will install two new HEPA filtration systems at a cost of \$56,000 per unit.<sup>10</sup> The other facility is assumed to select the HRA/permit modification option in subdivision (e) for two spray booths and pay a one-time permit application fee of \$3,028 for each booth. Eleven facilities are assumed to install one downdraft table each to conduct coating removal activities. Each installation is expected to cost \$10,114.

*Spray Booth Requirements (subdivision (g))*

In order to meet the spray booth requirements of PAR 1469.1, all the affected 115 facilities are expected to purchase and use a hot wire anemometer at a cost of \$230 each with an annual calibration cost of \$200.

*Building Enclosure Requirements (subdivision (h))*

Based on the survey responses, majority of facilities are in compliance with the building enclosure requirements of the PAR 1469.1. Based on the staff estimate, 15 facilities would be required to

<sup>10</sup> Cost for HEPA system is based on the 2005 Final Staff Report for Proposed Rule 1469.1, in which the \$40,000 per unit cost has been adjusted to 2020 dollars using the Marshall & Swift all industries index.

make minor modifications to their building enclosures. Each modification is expected to cost \$9,500 (Two 12' by 16' openings at a cost of \$13.50/sq. ft.).

*Housekeeping, Recordkeeping, and Best Management Practices (subdivisions (i) and (j))*

To meet the housekeeping requirements of PAR 1469.1, an estimated 41 facilities are assumed to conduct two hours per week of housekeeping activity, and 15 minutes per week of recordkeeping. Labor costs assume \$25/hour for 50 weeks per year.

Staff assumed that all facilities would be required to implement new requirements for best management practices. Staff assumed all 231 spray booths would install a 115-volt solenoid valve to meet the requirements of subparagraph (j)(1)(B). Each solenoid valve installation is estimated to cost \$1,163 (\$163 plus \$1,000 installation). To establish workpiece support equipment transport routes and storage areas and posting of post-operation ventilation time signage, a one-time cost of \$25 (one-hour labor) per facility was assumed (total of two hours per facility).

*Pressure Drop Across Filter Media (subdivision (k))*

PAR 1469.1 would also require daily pressure gauge readings. According to the survey responses, majority of the facilities indicated that they operate at least five days per week. For the purpose of estimating the cost for this category, staff assumed pressure gauge readings for 15 minutes per day across all facilities at \$25 per hour. According to a review of spray booth permit information, 27 spray booths currently equipped with HEPA controls are not required to have a dedicated HEPA pressure gauge. The cost of a pressure gauge is estimated to be \$63.50 each (one per spray booth) and can be installed by the facility operator. Daily recording of the minimum pressure drop readings would be done along with the daily spray booth pressure gauge readings, and annual final stage filter replacement is assumed to take one hour per spray booth per year (\$25 per hour labor).

*Spray Booth Exhaust Duct Cleaning Requirements (subdivision (l))*

PAR 1469.1 would also require duct cleaning for spray booths vented to filtration systems with control efficiencies that are less than that of HEPA. Spray booths with HEPA controls are assumed to not require duct cleaning. A one-time cost of \$7,459 for duct cleaning is assumed for 11 spray booths. Material testing of duct deposits is assumed to cost of \$150 (one-time), and recordkeeping upon completion of the duct cleaning assumes 15 minutes at \$25 per hour.

*Total PAR 1469.1 Compliance Costs Summary*

As presented in Table 8, the total annual cost of PAR 1469.1 requirements, is about \$443,000 across all affected facilities. Capital costs for purchase and installation of required equipment, signage, and other and one-time expenditures were annualized over a period of 10 years. The total one-time costs associated with PAR 1469.1 are estimated at \$82,000 annually (18.5 percent of the total). Recurring costs for various routine checks, housekeeping and recordkeeping are presented as annual costs across the entire affected universe of facilities. The total recurring cost associated with PAR 1469.1 is about \$361,000 (81.5 percent of the total). The average annual cost per facility potentially affected by PAR 1469.1 is approximately \$3,850.

Table 9 presents total annual cost of PAR 1469.1 apportioned across industry type, as well as the number of facilities in each industry. The Electroplating, Plating, Polishing, Anodizing, and Coloring industry (North American Industrial Classification System or NAICS 332813) has the greatest share (28.6 percent) of the additional compliance costs.

**Table 8 – Estimated Annual Compliance Cost of PAR 1469.1**

<b>PAR 1469.1 Compliance Costs</b>				
	Quantity (number of spray booths or facilities)	Per unit cost	Recurrence	Total Industry Cost
<b>One-Time Costs (annualized over 10 yrs)*</b>				
New HEPA spray booth emission controls (purchase & installation)	2 spray booths	\$56,000.00	One-time	\$13,776.00
HRA option - permit application fee	2 spray booths	\$3,028.23	One-time	\$744.94
HEPA controls for dried coating removal activities	11 downdraft tables	\$10,114.00	One-time	\$13,684.24
Closing Building Openings	15 facilities	\$5,184.00	One-time	\$9,564.48
"Interlock" system preventing use of spray equipment unless exhaust system is operating (installation and purchase)	231 spray booths	\$1,163.00	One-time	\$33,044.31
Marking workpiece support equipment transit paths and storage areas	115 Facilities	\$25.00	One-time	\$353.63
Posting post-operation minimum ventilation time per (j)(2)(C)	115 Facilities	\$25.00	One-time	\$353.63
Dedicated HEPA filter pressure gauge - all associated costs (e.g. pressure gauge, installation, permitting)	27 spray booths	\$63.50	One-time	\$210.88
Duct cleaning for spray booths without HEPA systems	11 spray booths	\$7,459.00	One-time	\$10,092.03
<b>Total</b>				<b>\$81,824.14</b>
<b>Recurring Costs (annual cost)</b>				
Air velocity requirements (industry-wide)	231 spray booths	--	Annual	\$35,503.35
Housekeeping (2 hrs. per week)	41 facilities	\$2,500	Annual	\$102,500.00
Recordkeeping of Housekeeping activities (15 mins per week)	115 facilities	\$312.50	Annual	\$35,937.50
Daily pressure drop readings	115 facilities	\$1,562.50	Annual	\$179,687.50
Pressure drop final stage filter replacement	231 spray booths	\$25.00	Annual	\$5,775.00
Duct deposition material testing	2 spray booths	\$150	Annual	\$300.00
Duct cleaning recordkeeping (15 minutes)	231 spray booths	\$6.25	Annual	\$1,443.75
<b>Total</b>				<b>\$361,147.10</b>
<b>TOTAL</b>				<b>\$442,971</b>

\*Capital costs were annualized over 10 years using a Capital Recovery Factor of 0.123

**Table 9 – Compliance Cost of PAR 1469.1 by Industry**

<b>NAICS Code</b>	<b>Industry Description</b>	<b># of Facilities</b>	<b>Share of 1469.1 Cost</b>	<b>Industry Cost</b>
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	34	28.6%	\$ 126,672.26
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	12	10.1%	\$ 44,707.86
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	10	8.4%	\$ 37,256.55
332722	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	5	4.2%	\$ 18,628.27
423860	Transportation Equipment and Supplies (except Motor Vehicle) Merchant Wholesalers	5	4.2%	\$ 18,628.27
332710	Machine Shops	4	3.4%	\$ 14,902.62
336411	Aircraft Manufacturing	4	3.5%	\$ 15,647.56
332322	Sheet Metal Work Manufacturing	3	2.5%	\$ 11,176.96
334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	3	5.6%	\$ 4,952.96
336412	Aircraft Engine and Engine Parts Manufacturing	3	2.5%	\$ 11,176.96
325510	Paint and Coating Manufacturing	2	1.7%	\$ 7,451.31
326199	All Other Plastics Product Manufacturing	2	1.7%	\$ 7,451.31
424690	Other Chemical and Allied Products Merchant Wholesalers	2	1.7%	\$ 7,451.31
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	2	1.7%	\$ 7,451.31
--	Others	24	20.2%	\$ 89,415.72
<b>Total</b>				<b>\$ 442,971</b>

### Regional Macroeconomic Impacts

South Coast AQMD does not estimate regional macroeconomic impacts when the total annual compliance cost is less than one million current U.S. dollars as the Regional Economic Models Inc. (REMI)'s Policy Insight Plus Model is not able to reliably evaluate impacts that are so small relative to the baseline regional economy.

**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. PAR 1469.1 requirements for housekeeping, best management practices and building enclosures are needed to minimize fugitive emissions.

**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 1469.1 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 following analysis compares PAR 1469.1 with federal Aerospace NESHAP (subpart GG) and 6H NESHAP requirements. Staff is

not aware of any other applicable regulations. Only the relevant provisions of the NESHAPs relating to standards, monitoring, recordkeeping and reporting have been included.

Rule Element	PAR 1469.1	NESHAP Subpart GG	NESHAP Subpart 6H																
<b>Applicability</b>	Any operation in which chromate coatings are sprayed	Facilities engaged in the manufacture or rework of commercial, civil or military aerospace vehicles or components and that are major sources	Non-major source facilities that spray coatings containing target hazardous air pollutants to metal or plastic substrates																
<b>Point Source Requirements:</b> Spraying operations	<ul style="list-style-type: none"> <li>• For facilities with spray booths without HEPA filters:                             <ul style="list-style-type: none"> <li>○ Upgrade to HEPA controls no later than January 1, 2026; or</li> <li>○ Modify existing permits to limit chromate emissions and specify minimum filter efficiency consistent with the approved HRA using 2015 OEHHA risk assessment guidance</li> </ul> </li> <li>• For all other facilities, spraying of chromate coatings must be conducted in spray booths equipped with HEPA filters, at a minimum</li> </ul>	<ul style="list-style-type: none"> <li>• For sources constructed prior to June 6, 1994, spraying of coatings containing inorganic hazardous air pollutants are required to use waterwash system, or two-stage filters with minimum control efficiencies for:                             <ul style="list-style-type: none"> <li>○ Liquids                                     <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 10px;"><u>Min. Filter Eff.</u></td> <td><u>Particle Size</u></td> </tr> <tr> <td>&gt;90</td> <td>&gt;5.7 µm</td> </tr> <tr> <td>&gt;50</td> <td>&gt;4.1 µm</td> </tr> <tr> <td>&gt;10</td> <td>&gt;2.2 µm</td> </tr> </table> </li> <li>○ Solids                                     <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 10px;"><u>Min. Filter Eff.</u></td> <td><u>Particle Size</u></td> </tr> <tr> <td>&gt;90</td> <td>&gt;8.1 µm</td> </tr> <tr> <td>&gt;50</td> <td>&gt;5.0 µm</td> </tr> <tr> <td>&gt;10</td> <td>&gt;2.6 µm</td> </tr> </table> </li> </ul> </li> <li>• For sources constructed on and after June 6, 1994, spraying of coatings containing chromium are required to use HEPA filters, or                             <ul style="list-style-type: none"> <li>○ Three-stage filters with minimum control efficiencies for:                                     <ul style="list-style-type: none"> <li>▪ Liquids</li> </ul> </li> </ul> </li> </ul>	<u>Min. Filter Eff.</u>	<u>Particle Size</u>	>90	>5.7 µm	>50	>4.1 µm	>10	>2.2 µm	<u>Min. Filter Eff.</u>	<u>Particle Size</u>	>90	>8.1 µm	>50	>5.0 µm	>10	>2.6 µm	<ul style="list-style-type: none"> <li>• Conduct spraying operations in a spray booth or prep station</li> <li>• Spray booth or prep station must be:                             <ul style="list-style-type: none"> <li>○ Fitted with filters demonstrated to achieve at least 98% control efficiency; or</li> <li>○ A waterwash booth that is maintained according to manufacturer’s specifications and consistent with good air pollution control practices</li> </ul> </li> </ul>
<u>Min. Filter Eff.</u>	<u>Particle Size</u>																		
>90	>5.7 µm																		
>50	>4.1 µm																		
>10	>2.2 µm																		
<u>Min. Filter Eff.</u>	<u>Particle Size</u>																		
>90	>8.1 µm																		
>50	>5.0 µm																		
>10	>2.6 µm																		

Rule Element	PAR 1469.1	NESHAP Subpart GG	NESHAP Subpart 6H
		<p style="text-align: center;"><u>Min. Filter Eff. / Particle Size</u></p> <p style="text-align: center;">&gt;95            &gt;2.0 µm                      &gt;80            &gt;1.0 µm                      &gt;65            &gt;0.42 µm</p> <p style="margin-left: 20px;">▪ Solids</p> <p style="text-align: center;"><u>Min. Filter Eff. / Particle Size</u></p> <p style="text-align: center;">&gt;95            &gt;2.5 µm                      &gt;85            &gt;1.1 µm                      &gt;75            &gt;0.70 µm</p> <ul style="list-style-type: none"> <li>• An approved equivalent to a three-stage control system</li> </ul>	
<p><b>Point Source Requirements for Dried Chromate Coating Removal Activities</b></p>	<p>Conduct dried chromate coating removal activities:</p> <ul style="list-style-type: none"> <li>• In a spray booth that is equipped with HEPA filters, at a minimum, or spray booth that meets the HRA compliance option; or</li> <li>• Vented to a control device equipped with HEPA or HEPA-equivalent or better controls</li> </ul>	<p>For non-chemical depainting operations that generate inorganic hazardous air pollutant emissions from dry media blasting:</p> <ul style="list-style-type: none"> <li>• The operation must be performed in an enclosed area or in a closed cycle depainting system; and</li> <li>• The air stream from the operation must pass through:                             <ul style="list-style-type: none"> <li>○ A dry filter system meeting a minimum efficiency specified in the rule;</li> <li>○ A baghouse; or</li> <li>○ A waterwash system before being released to the atmosphere</li> </ul> </li> </ul>	<p>None Specified</p>

Rule Element	PAR 1469.1	NESHAP Subpart GG	NESHAP Subpart 6H
		<ul style="list-style-type: none"> <li>Mechanical and hand sanding are exempt from depainting requirements</li> </ul>	
<b>Spray Booth Requirements:</b> Preventing coating particles from exiting through spray booth openings	<ul style="list-style-type: none"> <li>Do not allow visible emissions to exit the spray booth</li> <li>Spray booths must meet average and minimum inward face air velocity requirements or meet requirements of a PTE using Method 204 on a regular frequency of:               <ul style="list-style-type: none"> <li>Once every six months for open face spray booths; or</li> <li>Once every 12 months for enclosed spray booths</li> </ul> </li> <li>All spray booth filters must be free of leaks, breaks, and tears, and properly seated</li> </ul>	Apply coatings in a booth or hangar in which air flow is directed downward onto or across the part or assembly being coated	None Specified
<b>Building Enclosure Requirements</b>	<ul style="list-style-type: none"> <li>Conduct spraying operations, dried coating removal activities, and demasking activities within a building enclosure</li> <li>Store workpiece support equipment and cleaning equipment within a building enclosure</li> <li>Close building openings within 20 feet of the opening of an open face spray booth and areas where dried chromate coating removal activities and demasking activities occur</li> </ul>	None Specified	None Specified
<b>Housekeeping:</b>	<ul style="list-style-type: none"> <li>Clean, weekly if not within a PTE vented to HEPA filters, or monthly if within a</li> </ul>	None Specified	None Specified

Rule Element	PAR 1469.1	NESHAP Subpart GG	NESHAP Subpart 6H
<p>Cleaning areas outside of spray booths</p>	<p>PTE vented to HEPA filters, open floor areas within 20 feet of all the following:</p> <ul style="list-style-type: none"> <li>○ Opening of an open face spray booth</li> <li>○ Ingresses and egresses of an enclosed spray booth</li> <li>○ Areas where dried chromate coating removal or demasking activities are conducted</li> <li>○ Areas where chromate coatings are mixed</li> <li>○ Storage areas for equipment materials that may contain chromates</li> <li>○ Waste storage areas for materials that may contain chromates</li> <li>○ Workpiece support equipment transit paths, work areas, and storage areas</li> <li>● Clean once per day on days when chromate spraying operations are conducted, within 20 feet of ingresses and egresses of an enclosed spray booth located outside of a building enclosure</li> </ul>		
<p><b>Housekeeping:</b> Spills</p>	<p>Clean spills of liquid or solid material that may contain chromates immediately but no later than hour after being spilled</p>	<p>The handling and storage of coatings and waste that contains organic hazardous air pollutants must be conducted in a manner that minimizes spills</p>	<p>None Specified</p>
<p><b>Housekeeping:</b> Within spray booths</p>	<ul style="list-style-type: none"> <li>● Clean all floors within a spray booth without protective coverings at least once per calendar week, during any week when activities are conducted within the booth</li> </ul>	<p>None Specified</p>	<p>None Specified</p>

Rule Element	PAR 1469.1	NESHAP Subpart GG	NESHAP Subpart 6H
	<ul style="list-style-type: none"> <li>• If protective coverings are used within a booth, remove and replace all spray booth protective floor or wall coverings at least every six months</li> <li>• Facility may elect to use sticky mats in lieu of housekeeping requirements within spray booths if sticky mats are:               <ul style="list-style-type: none"> <li>○ At least two feet in depth and as wide as the opening at all spray booth ingresses and egresses</li> <li>○ Placed such that all traffic travels over the sticky mats</li> <li>○ Replaced once a day on days when operations are conducted in the booth</li> </ul> </li> </ul>		
<b>Housekeeping:</b> Waste disposal	Place waste materials that may contain chromates immediately in a container that: <ul style="list-style-type: none"> <li>• Remains closed unless being filled or emptied</li> <li>• Is lined with removeable bags if waste material will be transferred to other on-site containers</li> </ul>	None Specified	None Specified
<b>Housekeeping:</b> HEPA vacuum	If a HEPA vacuum is used: <ul style="list-style-type: none"> <li>• HEPA filter should be free leaks, breaks, tears, or other types of damage, and securely latched and properly situated</li> <li>• Vacuum must be emptied into a container within a spray booth and the container must remain closed except being filled or emptied</li> </ul>	None Specified	None Specified

Rule Element	PAR 1469.1	NESHAP Subpart GG	NESHAP Subpart 6H
<p><b>Best Management Practices (BMP):</b> Chromate spraying operations</p>	<ul style="list-style-type: none"> <li>• Keep ingresses and egresses of an enclosed spray booth closed while conducting spraying operations</li> <li>• Use a system to ensure that spray booth air pollution control system is operating while chromate spraying equipment is being used</li> </ul>	<ul style="list-style-type: none"> <li>• Waterwash booths shall remain in operation during coating operations</li> <li>• Interlock for spraying equipment and pressure differential is a compliance option</li> </ul>	<p>None specified</p>
<p><b>BMP:</b> Spray booth operations</p>	<ul style="list-style-type: none"> <li>• When removing protective spray booth floor, wall, or exhaust coverings:                             <ul style="list-style-type: none"> <li>○ Operate air pollution control system</li> <li>○ Ensure that enclosed spray booth ingresses and egresses are closed</li> <li>○ Place waste materials that may contain chromates immediately in a container, and container should remain closed unless being filled or emptied</li> </ul> </li> <li>• Operate the air pollution control system for a minimum of three air exchanges within the spray booth or five minutes, whichever is longer after:                             <ul style="list-style-type: none"> <li>○ Conducting spraying operations</li> <li>○ Conducting dried chromate coating removal activities</li> <li>○ Removing protective floor, wall, or exhaust coverings</li> </ul> </li> <li>• Do not operate air pollution control system when the final stage filters are being removed, replaced or are missing, damaged, or improperly installed</li> </ul>	<p>None specified</p>	<p>Painters must be trained every 5 years in techniques to minimize paint overspray, including routine spray booth and filter maintenance</p>

Rule Element	PAR 1469.1	NESHAP Subpart GG	NESHAP Subpart 6H
<b>BMP:</b> Transfer efficiency	Spray coatings using HVLP spray, electrostatic application, or other alternative application that meets the transfer efficiency of HVLP spray as demonstrated to the Executive Officer	Application Equipment: <ul style="list-style-type: none"> <li>• Flow/curtain coating;</li> <li>• Dip coat</li> <li>• Roll coating;</li> <li>• Brush coating</li> <li>• Cotton-tipped swab application;</li> <li>• Electrodeposition (dip) coating;</li> <li>• High Volume Low Pressure (HVLP) spraying;</li> <li>• Electrostatic spray.</li> <li>• Other methods equivalent to HVLP or electrostatic application</li> </ul>	Painters must be trained every 5 years in techniques to minimize paint overspray, including: <ul style="list-style-type: none"> <li>• Spray gun equipment selection, set up, and operation</li> <li>• Spray techniques to improve transfer efficiency, minimize coating usage and overspray</li> </ul>
<b>BMP:</b> Dried chromate coating removal activities	When conducting dried chromate coating removal activities within a spray booth, ensure that spray booth is being operated properly, visual emissions are prevented, inward face air velocity requirements are met, and filter is operating within minimum and maximum pressure drop limits	None Specified	None Specified
<b>BMP:</b> Workpiece support equipment	<ul style="list-style-type: none"> <li>• Establish and clearly mark workpiece support equipment transit paths, work areas, and storage areas outside of a spray booth or PTE</li> <li>• Transport/store equipment within established paths and work areas and storage areas</li> </ul>	None Specified	None Specified
<b>BMP:</b> Visual inspections	Perform weekly visual inspection of the visible filter media for leaks, breaks, tears, and improper seating	None Specified	None Specified

Rule Element	PAR 1469.1	NESHAP Subpart GG	NESHAP Subpart 6H
<b>BMP:</b> Personal Protective Equipment	Remove personal protective equipment in a manner that minimizes fugitive emissions	None Specified	None Specified
<b>Pressure Drop Across Filter Media:</b> Pressure gauge	Install pressure gauge to continuously monitor the pressure drop across the Spray Booth final stage filter media	Install pressure gauge across filter banks	None Specified
<b>Pressure Drop Across Filter Media:</b> Maximum pressure drop	<ul style="list-style-type: none"> <li>• Maintain the pressure drop across spray booth final stage filter media at or below the maximum pressure drop specified in a South Coast AQMD permit or the filter manufacturer's recommended maximum pressure drop, whichever is lower</li> <li>• Do not operate a spray booth if the pressure drop is above the maximum limit</li> </ul>	Shut down operation and take corrective action when the pressure drop exceeds or falls below the filter manufacturer's recommended limit(s)	None Specified
<b>Pressure Drop Across Filter Media:</b> Minimum pressure drop	<ul style="list-style-type: none"> <li>• Maintain the pressure drop across the spray booth final stage filter media at or above the minimum pressure drop limit specified in a South Coast AQMD permit or established by taking a measurement of the pressure drop: <ul style="list-style-type: none"> <li>○ As of January 1, 2023, using the existing final stage filter media until replacement with new filters; and</li> <li>○ When new final stage filters are installed</li> </ul> </li> <li>• Do not operate a spray booth if the pressure drop is below the minimum limit</li> </ul>	Shut down operation and take corrective action when the pressure drop exceeds or falls below the filter manufacturer's recommended limit(s)	None Specified

Rule Element	PAR 1469.1	NESHAP Subpart GG	NESHAP Subpart 6H
<p><b>Pressure Drop Across Filter Media</b> Maintain specifications and records</p>	<ul style="list-style-type: none"> <li>• Maintain filter specification sheets for spray booth final stage filter media</li> <li>• Maintain records of any established minimum pressure drop limits</li> </ul>	<p>None Specified</p>	<p>None Specified</p>
<p><b>Pressure Drop Across Filter Media</b> Recording pressure drop</p>	<ul style="list-style-type: none"> <li>• Record pressure drop at least once on days when conducting chromate spraying or dried chromate coating removal activity within the spray booth</li> <li>• In lieu of recording daily pressure drop, facility may use a DAS to continuously record the pressure drop, and must:                             <ul style="list-style-type: none"> <li>○ Record at least once every 60 minutes on days when chromate spraying operation or dried chromate coating removal activity is conducted</li> <li>○ Generate a data file in a format approved by the Executive Officer</li> <li>○ Have an audible alarm that alerts when the pressure drop is not within maximum or minimum limits</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Continuously monitor pressure drop across the filter and read and record the pressure drop once per shift; or</li> <li>• Install an interlock system that automatically shuts down the coating spray application system if pressure drop exceeds or falls below filter manufacturer’s recommended limits</li> </ul>	<p>None Specified</p>
<p><b>Spray Booth Exhaust Duct Cleaning Requirements</b> Based on facility observations</p>	<ul style="list-style-type: none"> <li>• Conduct visual inspection of spray booth duct immediately downstream of final stage filter when replacing filter media</li> <li>• If overspray or dried coating is observed in the spray booth duct:                             <ul style="list-style-type: none"> <li>○ Clean the duct and inspect associated exterior surfaces and remove all overspray and dried coatings no later than seven days after observation or</li> </ul> </li> </ul>	<p>None Specified</p>	<p>None Specified</p>

Rule Element	PAR 1469.1	NESHAP Subpart GG	NESHAP Subpart 6H
	<p>before any chromate spraying operations are conducted in the spray booth; or</p> <ul style="list-style-type: none"> <li>○ Analyze the overspray or dried coating for the presence of hexavalent chromium, and if found, clean the duct and inspect associated exterior surfaces and remove all overspray and dried coatings no later than 14 days after observation or before any chromate spraying operations are conducted in the spray booth</li> </ul>		
<p><b>Spray Booth Exhaust Duct Cleaning Requirements</b> Based on agency observations</p>	<p>If a facility receives written notification from South Coast AQMD that confirms the presence of hexavalent chromium in the duct or associated exterior surfaces, clean the duct an surfaces, and not operate the booth until cleaning is conducted</p>	<p>None Specified</p>	<p>None Specified</p>
<p><b>Recordkeeping</b></p>	<ul style="list-style-type: none"> <li>● Keep records of chromate coatings usage</li> <li>● Keep records of visual inspection of spray booth duct when final stage filter media is replaced, including photographs of the duct</li> <li>● Maintain records to demonstrate compliance with housekeeping and best management practices requirements</li> <li>● Keep records of spray booth air velocity measurements or PTE demonstrations</li> <li>● Keep records of pressure drop readings or DAS data files</li> </ul>	<p>Primer and Topcoat Application Operations – Inorganic Hazardous Air Pollutant Emissions</p> <ul style="list-style-type: none"> <li>● Record pressure drop across dry particulate filters or HEPA filters once each shift during which coating occurs.</li> <li>● Record water flow rate through waterwash system once each shift during which coating operations occur.</li> <li>● Include acceptable limits of pressure drop or water flow rate.</li> </ul>	<ul style="list-style-type: none"> <li>● Records documenting that each painter completed the training, including dates</li> <li>● Documentation of filter control efficiency</li> <li>● Documentation that spray gun meets transfer efficiency requirements</li> </ul>

Rule Element	PAR 1469.1	NESHAP Subpart GG	NESHAP Subpart 6H
	<ul style="list-style-type: none"> <li>• Keep records of spray booth final stage filter media replacement and established minimum pressure drop</li> <li>• Retain records for five years, with at least two most recent years kept onsite</li> </ul>	<ul style="list-style-type: none"> <li>• Keep manufacturer-supplied filter documentation, for new facilities</li> <li>• Semiannual reports occurring every 6 months from date of notification of compliance status that identify:                             <ul style="list-style-type: none"> <li>○ Each exceedance of the operating parameters established for a control device under the initial performance test;</li> <li>○ All times when a primer or topcoat application operation was not immediately shut down when the parameter monitoring was outside the limit(s) specified by the filter or booth manufacturer.</li> </ul> </li> <li>• Annual reports beginning 12 months after date of notification of compliance status listing the number of times pressure drop or water flow rate was outside the limit(s) specified by the filter or booth manufacturer</li> </ul>	<ul style="list-style-type: none"> <li>• Records of any deviation from rule requirements</li> </ul>
<p><b>Prohibitions:</b> New spray booths</p>	<ul style="list-style-type: none"> <li>• Prohibit installation or construction of new open face booths unless located within a PTE vented to HEPA filters, at a minimum</li> </ul>	None Specified	None Specified

Rule Element	PAR 1469.1	NESHAP Subpart GG	NESHAP Subpart 6H
	<ul style="list-style-type: none"> <li>Prohibit installation of new spray booths outside of a building enclosure, unless spray booths are greater than 10,000 square feet.</li> </ul>		
<b>Interim Requirements</b>	Existing requirements (not new rule language)	None Specified	None Specified
<b>Exemptions</b>	<ul style="list-style-type: none"> <li>Rule shall not apply to thermal spraying operations</li> <li>Spray booth requirements do not apply to operations where chromate coatings are applied only by flow coater, roll coater, dip coater, or hand application methods</li> <li>Spray booth and transfer efficiency requirements do not apply to any touch up and repair operation spraying chromate coatings conducted outside of a spray booth, provided that it is performed within a building enclosure and emissions and cancer risk have been calculated in an approved health risk assessment that limits facility-wide cancer risk to 10 in a million</li> </ul>	Spray-applied coatings do not include: <ul style="list-style-type: none"> <li>Coatings that are applied from a hand-held device with a paint cup capacity that is equal to or less than 3.0 fl. oz. and when the amount of a single coating formulation applied is no more than 3.0 fl. oz. in a single application</li> <li>Powder coating, hand-held, non-refillable aerosol containers, or non-atomizing application technology</li> </ul>	Spray-applied coatings do not include: <ul style="list-style-type: none"> <li>Thermal spraying</li> <li>Powder coating, hand-held, non-refillable aerosol containers, or non-atomizing application technology</li> <li>Coatings that are applied from a hand-held device with a paint cup capacity that is equal to or less than 3.0 fl. oz.</li> </ul>

**APPENDIX A – RESPONSE TO COMMENTS**

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4. The Boeing Company Email Correspondence (03/10/21)

**GSP Metal Finishing Email Correspondence, submitted 02/22/21**

**From:** mpalatas@gspmf.com <mpalatas@gspmf.com>  
**Sent:** Monday, February 22, 2021 8:12 AM  
**To:** Yunnie Osias <yosias@aqmd.gov>  
**Cc:** Michael Laybourn <MLaybourn@aqmd.gov>; 'Teresa Nieves-Montebello' <tnmontebello@gspmf.com>; jchristodulou@gspmf.com  
**Subject:** RE: Follow-up for PAR 1469.1 Public Workshop comment

Hi Yunnie,

Well, that person would be me at this point. Thanks for the thorough presentation last Thursday. I was, frankly, disheartened by all of the new requirements that will seemingly be levied on painting operators under 1469.1. These new requirements will increase our operating costs significantly, which will be passed onto customers, which will certainly lead many to take their business elsewhere (as in not in California), with the final result that businesses in California will be forced to close down due to reduced revenue.

1-1

That said, my comment concerned the filter differential pressure requirement specified in our existing spray booth permit (R-G28879). The wording states that the maximum differential pressure we can have across our UHEPA/final filter bank is 3.0" w/c, and the max we can have across our pre-filter bank is 1.5" w/c.

As an engineer, I always thought that this was not correctly specified. The specified maximum differential pressure reading should be some value above the "clean" filter reading. If our brand new/clean filter differential pressure is 1" w/c, limiting us to a maximum of 1.5" w/c will result in our changing the filters very frequently. AQMD needs to determine the delta that they can live with, and let operators ADD that maximum delta to the clean/new filter d/p. If, for example, AQMD wants to limit the d/p to 1.5" w/c, and the clean/new d/p is 1.0" w/c, then the maximum for that system would be 2.5" w/c.

1-2

You can call me anytime for questions.

Mike Palatas  
 VP, Operations  
 GSP Metal Finishing  
 818-744-1328

**Responses to GSP Metal Finishing Email Correspondence, submitted 02/22/2021**

- 1-1 Response: PAR 1469.1 balances the need for emissions reductions with the financial cost to industry. Based on the survey responses received from affected facilities, most spray booths are already meeting the requirements in PAR 1469.1. These requirements are intended to reduce fugitive emissions through enhanced parameter monitoring, housekeeping, and additional best management practices. PAR 1469.1 provides longer lead times if a facility needs to upgrade or install equipment; facilities with doors at building openings simply need to ensure that the doors are closed if within 20 feet of open face booths, and areas where dried chromate coating removal and demasking activities are conducted; no modifications to their buildings would be needed. Based on the Socioeconomic Impact Assessment contained in Chapter 4 of this Staff Report, it is not expected that PAR 1469.1 compliance costs will lead to a significant reduction in the number of facilities conducting chromate spraying.
- 1-2 Response: As mentioned in the PAR 1469.1 Staff Report, Rule 1469.1 currently requires the pressure drop across the air pollution control equipment filter media to be at or below the pressure drop established by permit condition or by the manufacturers recommended operating range if not specified by the permit. The provisions of PAR 1469.1 paragraph (o)(3) maintain this requirement until January 1, 2023. Beginning January 1, 2023, PAR 1469.1 subdivision (k) establishes new requirements for minimum pressure drop limits and modified maximum pressure drop limits across the final stage filter media based on the filter specifications. Unless specified in a South Coast AQMD permit, the minimum limit will be based on the recorded pressure drop for filters in place before January 1, 2023, and moving forward, when new filters are installed. The maximum pressure drop will be based on the filter specifications or the limit specified in a South Coast AQMD permit, whichever is lower. Therefore, PAR 1469.1 takes into account the “clean” filter reading when establishing the minimum pressure drop.

## Plasma Technology Incorporated Comment Letter, submitted 03/04/21

**PLASMA TECHNOLOGY INCORPORATED**

The Surface Engineering Company

1754 Crenshaw Blvd., Torrance, CA 90501-3384  
(310) 320-337370 Rye St., South Windsor, CT 06074-1218  
(860) 282-0659FAA: DN3R455L / EASA.145.4751  
Torrance, CA

March 4, 2021

To: Yunnie Osias, SCAQMD

From: Steve Norris, PTI  
James Unmack, Unmack Corporation  
Barbara Kanegsberg, BFK Solutions  
Ed Kanegsberg, BFK Solutions

Plasma Technology Incorporated (PTI) is a small business headquartered in Torrance CA. PTI has conducted high value surface coating processes for over 50 years. We appreciate the opportunity to comment on proposed Rule 1469.1.

*De minimis exemption*

The language of the February 17, 2021 rule does not consider a *de minimis* amount of chromium containing paint. PTI uses very low levels of strontium chromate two-part epoxy paint for touch up and repair, less than 1.5 **gallon** per year. The 2019 and 2020 SCAQMD Annual Emissions Report (AER) reported chromium emission from its paint booth that is **less than the minimum number that can be reported** (0.00001 lbs) (ref AER Reports).

2-1

Many of the requirements in Rule 1469.1 and a good deal of language in the draft Staff Report (Appendix 1) address dried coatings. PTI has found no published studies documenting adverse health effects resulting from exposure to dried chromate paint. Studies that involve soluble chromate indicate that it is readily bioavailable. The OSHA analytical method uses exhaustive extraction to recover Cr(VI) from dried paint. Given the lack of exposure studies and the fact that Cr(VI) in dried paint is tightly bound, increased costly measures to manage dried paint are not justified at this time.

PTI has investigated available information regarding dried paint in some detail. Adverse impact on health has been found for soluble chromate. Researchers (Park et al, 2004) performed a rigorous statistical analysis of the long-term health impacts of chromate exposure on a cohort of 2,372 men hired between August 1, 1950 and December 1, 1974 at a plant in Baltimore MD (1.3). The study is thorough and includes considerations of the possible impact of smoking and ethnic background. Air sampling was performed by the employer; and levels of water-soluble chromate were determined.

2-2

As far as we can determine, studies documenting adverse health impacts have all been performed using soluble chromate. We attempted to find studies documenting the health impact of dried coatings that contain Cr(VI). We conducted web searches. We reached

impact of dried coatings that contain Cr(VI). We conducted web searches. We reached out to OEHHA as well as to one of the researchers involved in the Park study. No published studies were found. The lack of such documented studies is surprising, considering the extensive use of chromate paints.

From a chemical standpoint, chromates in dried paint are far less readily extracted for analysis than soluble chromates. (Ref. Appendix 3.1) None of the studies available in the open literature identify the type of paint, whether a 2-part epoxy or an architectural one-part paint. And none of the available literature addresses the issue of Cr (VI) recovery (extractability) from the paints used in the study.

#### *Costs*

Costs associated with the proposed rule are very high, particularly considering the low level of chromate paint used by PTI. The alternative, utilizing the exemption (p-4) and moving touchup operations outside of our existing spray booth, would seem counterproductive in terms of desirable manufacturing practices and would also require a very expensive analysis to show low plant-wide risk.

Costs to meet the proposed requirements are significant, particularly considering the low level of paint used annually. We estimate the cost for design, build and maintenance of an enclosure for the PTI Paint Spray Booth in order to comply with the proposed AQMD Rule 1469.1. The costs are \$6160 to design and implement and \$3440 ongoing annual costs.

We include time and materials for a Senior Engineer and one Technician to design, procure and implement the enclosure. Initial training of two employees for proper filter monitoring in lieu of alarms is added to the initial cost. Annual on-going training and maintenance has also been calculated.

These costs are summarized in the following table.

2-2  
cont.

2-3

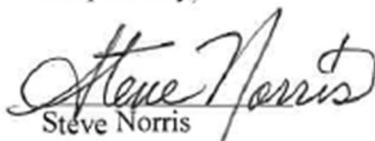
**Table: Costs to design, Implement, and Maintain Paint Booth Alarms**

Item	days	\$\$	Comments
Sr. Engineer burdened rate	1	960	\$40/hr. salary
Technician burdened rate	1	600	\$25/hr. wage
Trainer daily rate	1	2000	
<b>Design and implementation</b>			
Obtain preliminary equipment costs	0.5	480	Engineer
Fine tune equipment design	0.5	480	Engineer
Set up new equipment	1	1560	Engineer+ technician
Initial training for employees	0.5	1600	trainer+2 technicians
New enclosure		3000	
<b>Total to design and implement</b>		<b>6160</b>	
<b>Continuing annual expense</b>			
Train employees update (2 x per year)	1	3200	trainer+2 technicians
Maintenance	0.25	240	Engineer
<b>Total Annual cost</b>		<b>3440</b>	

2-3  
cont.

We appreciate your addressing these issues. Please do not hesitate to contact us should you require clarification.

Respectfully,



Steve Norris  
Facilities Manager  
Plasma Technology Inc.

James L Unmack, PE Fellow AIHA,  
Unmack Corporation,  
Advisor to PTI

Ed Kanegsberg  
Vice President,  
BFK Solutions LLC,

Advisor to PTI

Barbara Kanegsberg  
President  
BFK Solutions LLC,  
Advisor to PTI

### **References**

Proposed Amended Rule 1469.1 – Spraying Operations Using Coatings Containing Chromium (version February 17, 2021)

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

Criteria for a Recommended Standard Occupational Exposure to Hexavalent Chromium, DHHS (NIOSH) Publication No. 2013 – 128 (revised with minor technical changes), September 2013.

Park, R.M., J. F. Bena, L. Stayner, R.J. Smith, H.J. Gill, and P.S.J. Lees, Hexavalent Chromium and Lung Cancer in the chromate Industry: A Quantitative Risk Assessment, Risk Analysis, Vol. 24:5, p.1099 (2004)

### **Appendix 1 Excerpts from Preliminary Draft Staff Report**

(Preliminary Draft Staff Report  
Proposed Amended Rule 1469.1 – Spraying Operations Using Coatings Containing Chromium, February 202)

**Exemptions (p. 4)** 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.

### **Uncontrolled Sources (p.8)**

#### ***Dried Coating Removal***

**Responses to Plasma Technology Incorporated Comment Letter, submitted 03/04/21**

- 2-1 Response: Many of the recurring requirements in PAR 1469.1, such as housekeeping, filter pressure drop monitoring, and spray booth duct inspections, are dependent on the frequency that spraying operations or dried coating activities are conducted. Based on the information available to staff, most facilities would not be required by PAR 1469.1 to install new equipment or controls. Almost all facilities are already required to conduct spraying operations in spray booths vented to HEPA filters, and most facilities already conduct dried chromate coating removal activities within existing spray booths or other control devices.
- 2-2 Response: PAR 1469.1 was developed to reduce emissions of hexavalent chromium from chromate coating spraying and related operations. Dried chromate coatings in the form of overspray or dust from dried chromate coating removal activities contain hexavalent chromium which is a potent carcinogen. If not controlled, this can lead to the generation of fugitive emissions. Waste from chromate coating spraying and related activities also contain materials containing dried chromate coating particles and if not subject to adequate housekeeping activities, the particles can be re-suspended or ground into smaller particles by foot and vehicular traffic, resulting in fugitive emissions. South Coast AQMD relies on OEHHA's Risk Assessment Guidelines and the cancer potency factors that OEHHA developed through a public process. OEHHA has designated hexavalent chromium as a toxic air contaminant. South Coast AQMD staff has evidence from facility inspections and site visits that dried coating particles contain hexavalent chromium, therefore, PAR 1469.1 includes requirements that will reduce the emissions of hexavalent chromium from chromate spraying operations, dried coating removal activities, and demasking in order to protect public health.
- 2-3 Response: Existing Rule 1469.1 requires facilities to spray chromate coatings within an enclosure. PAR 1469.1 does not require facilities that conduct spraying operations within spray booths to construct any new enclosures. After a review of the facility, staff found that the facility is already complying with the building enclosure requirements of PAR 1469.1 and no building modifications would be needed.

## The Boeing Company Email Correspondence, submitted 03/09/21

**From:** Pearce (US), William R  
**Sent:** Tuesday, March 09, 2021 8:05 PM  
**To:** Yunnie Osias <[yosias@aqmd.gov](mailto:yosias@aqmd.gov)>  
**Subject:** PAR 1469.1 Comments

Please find attached comments with respect to latest proposed rule language. Appreciate previous comments that have been incorporated into the proposed rule. Still working on (e)(3)(A), but perhaps we can chat briefly in the morning if you have time about that specific item. Wanted to get the other comments to you for review.

(e)(3)(B)	Specify filter make and model evaluated in the approved health risk assessment. Filters that meet or exceed the efficiency of the specified filters may also be utilized.	3-1
(e)(5)	Unclear what is meant by “.....and associated surfaces” in the statement.	3-2
(i)(1)(E)	Sites have a number of storage areas for virgin coating product that contains chromates. There is no possibility of chromates being present in the areas, unless a can is dropped or damaged. Should that occur, rule already requires that any spill be cleaned up immediately. Language should be revised as follows: Storage areas for equipment and materials ( <b>excluding storage for unopened coating containers</b> ) that may contain chromates;	3-3
(i)(9)(B)	Reference to (A) should be removed, as other filters may be allowed. Language should be revised as follows: The HEPA vacuum is emptied into a container within a spray booth that meets the provisions of subparagraph (d)(1)( <b>A</b> ). The container shall remain closed except when being filled or emptied.	3-4
(j)(2)(A)(iii)	It is not physically possible to place the ULPA filters that are installed in our new paint booth in containers before removal from the booth. There is very little working room between the third stage bag filters and the fourth stage ULPA filters. To create adequate space, would actually need to remove the third stage filters prior to removal of the fourth stage, which will create unnecessary fugitive dust issues. In addition, we have operated previous booths (now out of service) where the HEPA filters were actually in their own separate unit ducted from the paint booth due to space constraints. Language should be revised as follows: Place all material that may contain chromates that are intended to be disposed of in a container ( <b>where feasible</b> ) before removal from the spray booth. The container shall remain closed except when being filled or emptied.	3-5

(k)(1)(B)	For permits that have already been issued by the District, Engineering has evaluated the information supplied by the manufacturer with respect to the maximum filter pressure drop for the final stage filters. The proposed rule should not second guess values that have been determined by Engineering staff and agreed to by permit holders. Language should be revised as follows: Beginning January 1, 2023, maintain the pressure drop across the spray booth final stage filter media at or below the maximum pressure drop specified in a South Coast AQMD permit or the filter manufacturer’s recommended maximum pressure drop, <b>whichever is lower.</b>	3-6
(l)(2)( A)	Unclear what is meant by “.....and associated surfaces” in the statement.	3-7
(l)(3)	Unclear as to what would trigger the event of District sampling specified, but facility should be afforded the same time frame (14 days) as in (l)(2)(B) for cleaning of the duct.	3-8
(n)(2)	Language appears to prohibit the construction of any new paint hangars, where the entire building enclosure is the paint booth. Language should be revised to exclude these types of structures from prohibition.	3-9

**Responses to The Boeing Company Email Correspondence, submitted 03/09/21**

- 3-1 Response: PAR 1469.1 subparagraph (e)(3)(B) was revised to allow for filters with efficiencies that are greater than the filter efficiency evaluated in the approved health risk assessment.
- 3-2 Response: The rule language was revised to “associated exterior surfaces” to clarify that the provision is referring to surfaces that are exterior of the spray booth duct, such as the roof.
- 3-3 Response: PAR 1469.1 subparagraph (i)(1)(E) was revised to add the phrase “excluding storage areas used exclusively for unopened Coating containers” to clarify that those areas do not need to be cleaned according to the schedule required in paragraph (i)(1).
- 3-4 Response: PAR 1469.1 subparagraph (i)(9)(B) was revised so that a HEPA vacuum can be emptied within a spray booth that meets the requirements of paragraph (d)(1), which includes all spray booths complying with the rule.
- 3-5 Response: PAR 1469.1 clause (j)(2)(A)(iii) does not apply to filters. The disposal of filters is addressed in paragraph (i)(8), which applies to the disposal of waste materials.
- 3-6 Response: Subparagraph (k)(1)(B) addresses instances where filters installed in a spray booth have a manufacturer-specified maximum pressure drop that is lower than that of the filters submitted to South Coast AQMD during the permitting process when the maximum pressure drop was established. The intent of subparagraph (k)(1)(B) is to prevent potential filter ruptures by ensuring that the maximum pressure drop does not exceed the specified limit and to prevent permit modifications each time a different filter is used.
- 3-7 Response: See response to Comment 3-2.
- 3-8 Response: Paragraph (l)(3) is intended to address situations where the South Coast AQMD becomes aware of the presence of hexavalent chromium in a spray booth duct or on associated exterior surfaces and notifies the facility. These would likely be extreme cases where the amount of hexavalent chromium present is enough to be detected by a South Coast AQMD ambient monitor, or a situation where South Coast AQMD initiates testing of the duct or associated exterior surfaces. In these situations, staff believes that spray booths should not be operated until after cleaning is conducted. Additionally, the 14-day timeframe in clause (l)(2)(B)(i) takes into consideration the time needed for a facility to send a sample out for analysis. In paragraph (l)(3), the sample would already have been taken and analyzed prior to notifying the facility.

3-9 Response: The prohibition of new spray booths located outside of a building enclosure in paragraph (n)(2) was revised to exclude spray booths greater than 10,000 square feet.

**The Boeing Company Email Correspondence, submitted 03/10/21**

**From:** Pearce (US), William R <william.r.pearce@boeing.com>  
**Sent:** Wednesday, March 10, 2021 10:58 AM  
**To:** Yunnie Osias <yosias@aqmd.gov>  
**Subject:** RE: PAR 1469.1 Comments

As I was listening to you go over the recent revisions to the proposed rule language, two more items for discussion. Sections (f) does not seem to allow for removal of coatings within a paint booth that takes advantage of (e)(3). Section (k) does not take into account two-stage systems and the fact that the filters are back to back. There is not a feasible method to measure the second stage separately. } 4-1  
} 4-2

**Responses to The Boeing Company Email Correspondence, submitted 03/10/21**

- 4-1 Response: Subparagraph (f)(1)(A) was revised to allow for dried chromate coating removal activities to be conducted a spray booth that meets the requirements of paragraph (d)(1), which includes all spray booths complying with the rule.
- 4-2 Response: The staff report clarifies in Chapter 3, under the heading Pressure Drop Across Filter Media – Subdivision (k) that final stage filter media includes filter systems with multiple stages of filters where the filter efficiency for all the stages is certified as a whole by the manufacturer.