

Proposed Amended Rule 1469.1 - Spraying Operations Using Coatings Containing Chromium

Working Group Meeting #5
October 22, 2020, at 10:00 AM

Zoom meeting link:

<https://scaqmd.zoom.us/j/92364394037>

Meeting ID: 923 6439 4037

Meeting Password: 019853

Dial In: (669) 900-6833

Meeting Agenda

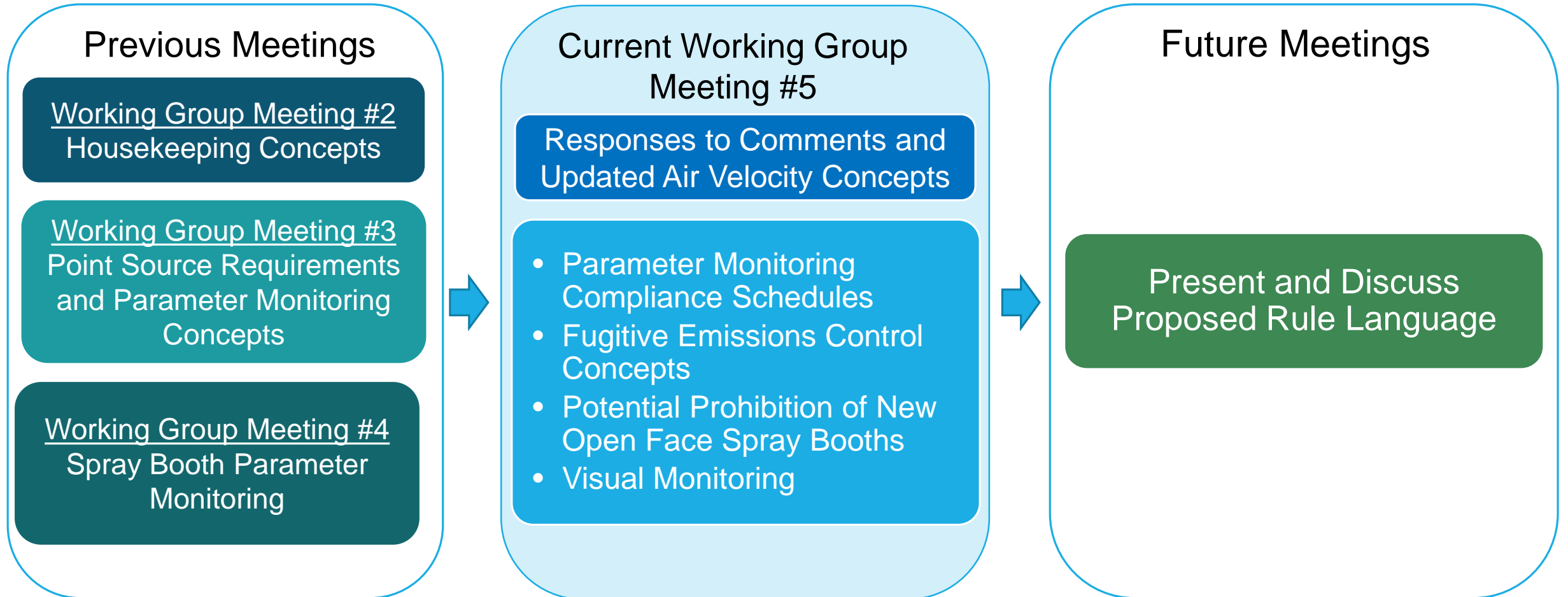
- Rule Amendment Process to Date
- Addressing Stakeholder Comments from Working Group Meeting #4
- Updated Proposal for Air Velocity Measurements and Pressure Differential Monitoring
- Fugitive Emissions Control Concepts
- Potential Prohibition of New Open Face Spray Booths
- Visual Monitoring
- Next Steps

Working Group Meeting #4 Summary

September 9, 2020

- Initial concepts for spray booth parameter monitoring
 - Require minimum filter face and open face air velocities
 - Air velocity measurement methods
 - Direct measurements of filter face and open face of spray booths
 - Alternative filter face velocity measurement procedures, which can be used in place of a direct filter face measurement
 - Enhanced pressure differential monitoring
 - Require minimum pressure differential across HEPA filters, along with existing maximum pressure differential limit
 - Introduced concept of continuous data logging requirement

Overview of Rule Amendment Process for PAR 1469.1



Addressing Stakeholder Comments from Working Group Meeting #4

Stakeholder Comments

Air Velocity Measurements

- Filter face velocity of 150 fpm is too high and may affect painting operations
- For open spray booths, velocity measurements at the opening are representative of the filter face velocity
- Spray booths are designed to meet existing rule provisions and OSHA/Fire Code are based on an average, not minimum velocity standards
- Measuring the air velocity every three months is too frequent

Data Logging of Differential Pressure

- Continuous pressure differential data logging will be costly, and removes incentive to regularly check filter health

Addressing Stakeholder Comments

- Based on stakeholder input, staff revised the proposed concepts for air velocity measurements and data logging for differential pressure monitoring
- Presentation today includes more comprehensive provisions for both topics
 - Staff incorporated the revisions to respond to stakeholder comments in the overall approach for air velocity measurements and differential pressure monitoring

Updated Proposal for Air Velocity Measurements and Pressure Differential Monitoring

Air Velocity Measurements

Key Components of Air Velocity Provisions

- Air velocity standards
 - Separate standards for walk-in and bench spray booths
 - Measurement locations
 - Average and minimum velocity standards
- Implementation approach
 - Assessment measurements
 - Compliance dates
 - Frequency of measurements
 - Failed measurements

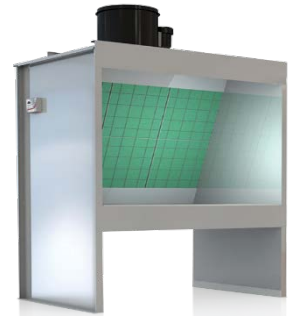
Air Velocity Measurements

Overview of Air Velocity Standards

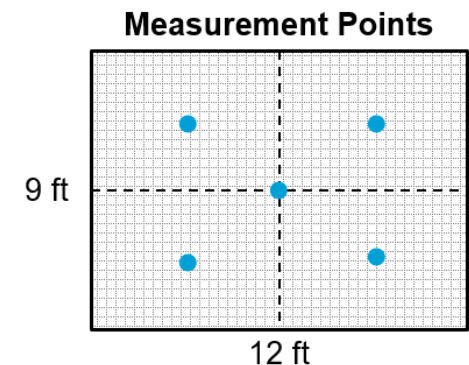
- Staff is proposing separate velocity standards for walk-in and bench spray booths, and for enclosed and open booths
 - Addresses stakeholder comments regarding measurements at the filter face and opening for open spray booths
 - Bench spray booths are generally raised and work areas are for smaller parts where the operators are reaching into the workspace
- Proposed standards have two elements:
 - Standard for average of measurement points
 - Standard for minimum velocity for individual measurement points
- Maintained proposed five-point measurement locations



Enclosed Bench Spray Booth



Open Bench Spray Booth



Air Velocity Measurements

Proposed Air Velocity Standards for Air Velocity Measurements for Walk-in and Bench Spray Booths

	Location of Measurement	Average	Minimum Velocity at Measurement Points
Enclosed Walk-in Spray Booth	At the Filter Face	100 fpm	75 fpm
Open Walk-in Spray Booth	Opening of the Booth		
Enclosed Bench Spray Booth	At the Filter Face	150 fpm	125 fpm
Open Bench Spray Booths	Opening of the Booth		

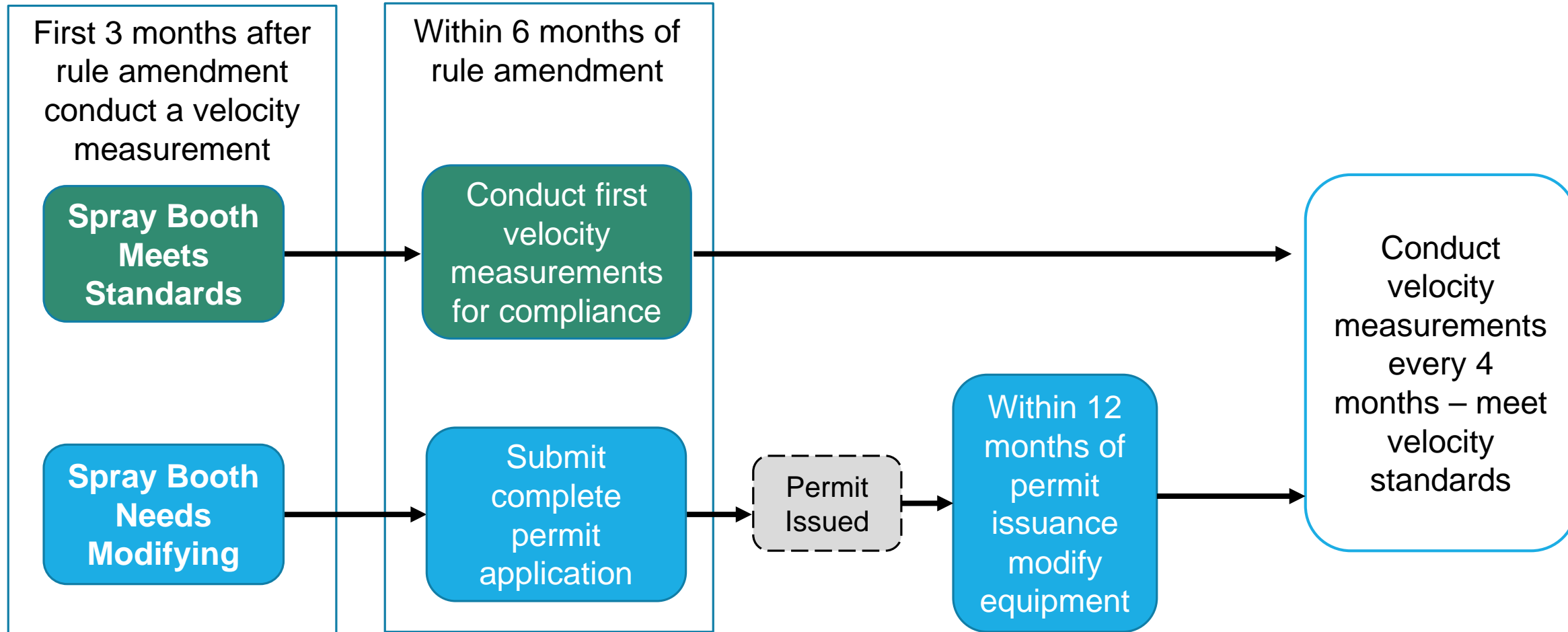
Air Velocity Measurements

Proposed Implementation Approach

- Require within three months of rule amendment that operator must conduct a velocity measurement
 - Purpose is to assess if spray booths can meet the velocity standards or if modifications are needed
 - Results not used for compliance purposes
- If modifications to the air pollution control device are needed, operator must submit complete permit applications within six months of rule amendment
 - Spray booths allowed to continue operating while awaiting permit issuance

Air Velocity Measurements

Flowchart for Proposed Initial Compliance Schedule



Air Velocity Measurements

Proposed Frequency

- Revised proposal reduces frequency for velocity measurements and adds a provision to further reduce the frequency after a series of successful measurements:
 - Initially require measuring air velocity every **four** months
 - After three consecutive passing measurements, reduce frequency to every **six** months
- When velocity requirements are not met, facilities required to stop operating
- Subsequent slides discuss procedures for failing velocity measurements

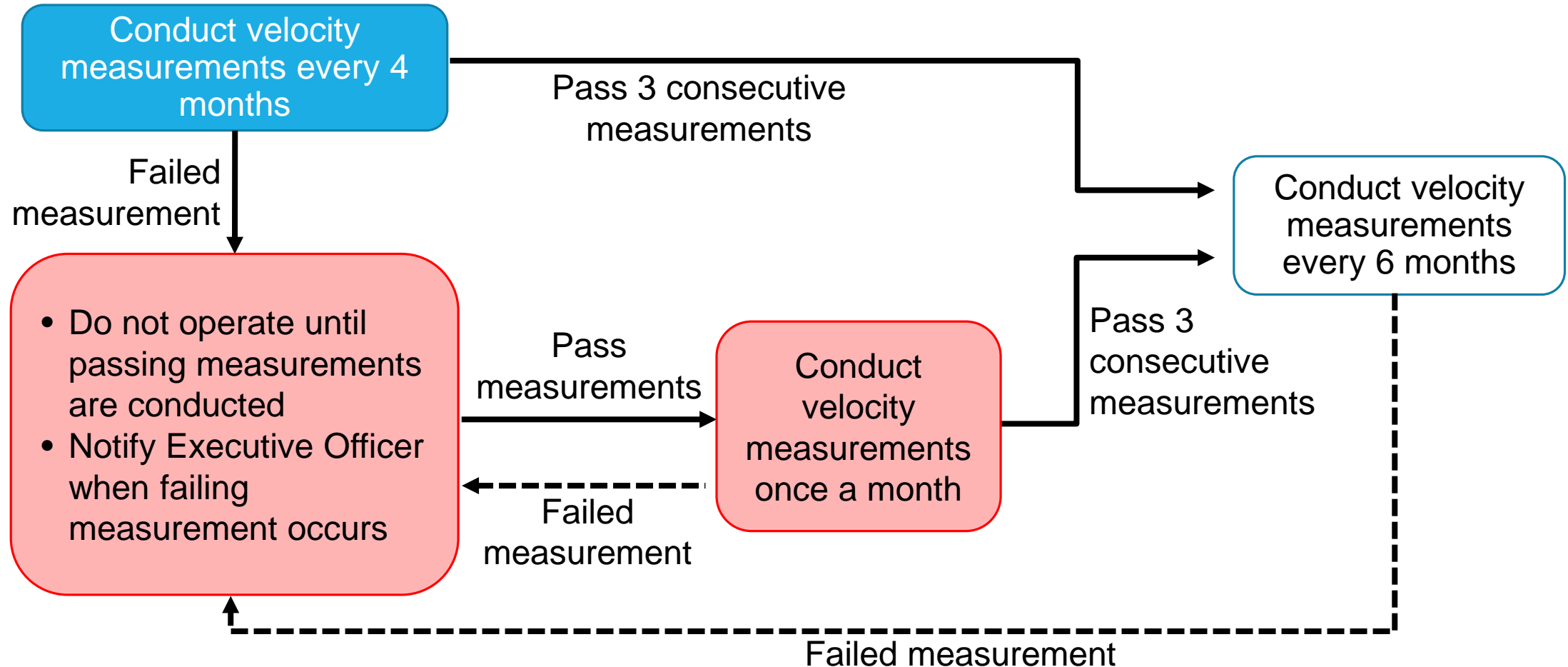
Air Velocity Measurements

Proposed Requirements for Failed Measurements

- A failing velocity measurement occurs when
 - Average velocity of the five measurement points is below the standards; OR
 - Any measurement point is below the minimum
- Spray booth with failing measurement required to
 - Cease operations until passing measurements are documented
 - Notify Executive Officer within 24 hours of the date of a failing measurement
 - Provide estimated time of repair and description of anticipated actions taken
- Upon completing repair, conduct velocity measurements once a month
 - After three consecutive passing velocity measurements, frequency can be reduced to once every six months

Air Velocity Measurements

Flowchart for Proposed Ongoing Compliance Schedule



Pressure Differential Monitoring

Revised and Updated Proposal

- Based on stakeholder comments, staff revised provisions for pressure differential requirements and is no longer proposing to require installation of a continuous data logger
- Upon Rule Amendment
 - Change recording frequency of maximum pressure differential from once per week to immediately after any spraying or coating-related operations occur
 - Add provision that prohibits operator from spraying unless operating under maximum pressure differential limit
- One Year After Rule Amendment
 - Require maximum and minimum pressure differential limits
 - Install audible alarm system to notify operator when pressure across the filters is outside the minimum and maximum values

Pressure Differential Monitoring

Requirements One Year After Rule Amendment

- Establish a minimum pressure differential limit based on filter manufacturers' specifications and maintain corresponding filter specification documents onsite
- Continue conducting pressure differential recordings immediately after any spraying or coating-related operations occur
- Install and operate audible alarm which alerts facility if spray booth pressure differential is outside of minimum and maximum limits
- If alarm is activated, stop operations in the spray booth
 - Notify Executive Officer within 24 hours of the date of alarm activation
 - Provide estimated time of repair and description of anticipated actions taken
- Spraying operations can resume after pressure differential is within specified range
- Require annual testing of alarm system to ensure proper operation

Fugitive Emissions Control Concepts

Overview

- Proposed concepts focus on minimizing fugitive emissions during spraying and coating-related operations conducted both inside and outside spray booths
- These requirements ensure:
 - Spray booths are operated as intended
 - Spraying operations are being conducted in a manner to maximize the collection of emissions by the pollution controls
 - Fugitive emissions from spraying and related operations are minimized

Fugitive Emissions Control Concepts



Spray Booth Best Management Practices

- Containment of Coating Particles
- Spray Booth Doors
- Post-Spraying Ventilation
- Interlock Systems
- Bench Spray Booths



Dried Coating Activities



Support Equipment Used During Spraying Activities



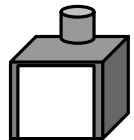
Paint Mixing



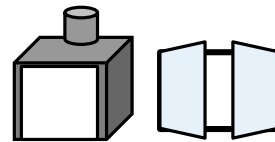
Spray Booth Best Management Practices

Introduction

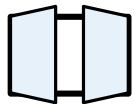
- Spray booth best management practices are generally preventative measures that can be implemented to minimize the generation or release of fugitive emissions
- The concepts discussed in subsequent slides apply to:



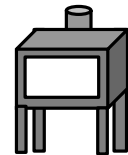
Open face spray booths



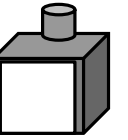
Both open face and enclosed spray booths



Enclosed spray booths

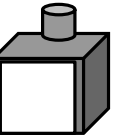


Bench spray booths



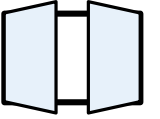
Containment of Coating Particles – Background

- Operations conducted in open face spray booths are more exposed to the surrounding environment than in enclosed spray booths
- Incorrect operating procedures could allow coating particles to escape from the open face
 - Conducting activities too close to spray booth opening
 - Directing spraying activities away from the booth interior



Containment of Coating Particles – Initial Concepts

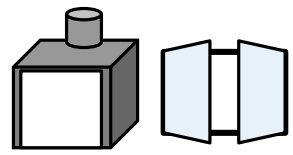
- Conduct operations such that visible emissions do not leave the spray booth opening
 - May be evidenced through visual observations of active operations or coating particles on flooring immediately outside of the spray booth
 - Allows operators to make the necessary adjustments to ensure that coating particles are contained within the booths without specific requirements that may not be applicable to all operations



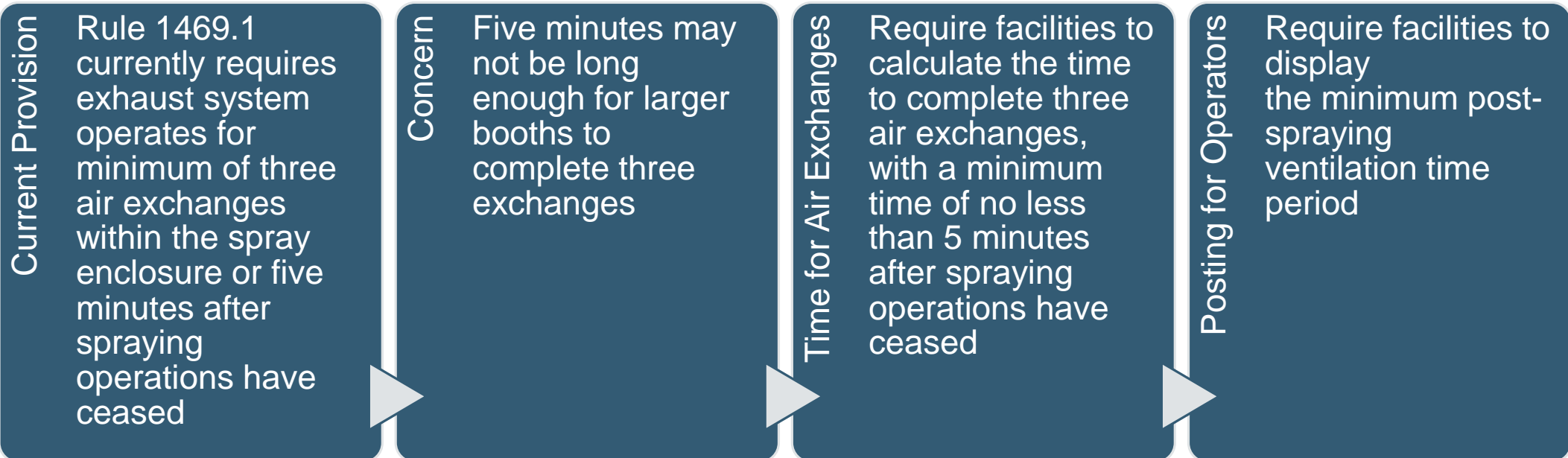
Spray Booth Doors

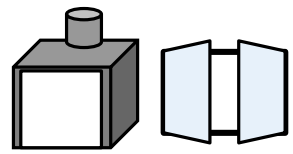
- All doors at ingress and egress of enclosed booths must be closed when spraying or other coating-related operations that potentially generate fugitive emissions are being conducted in the booths





Post-Spraying Ventilation



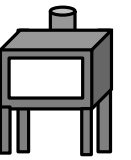


Interlock System

- An interlock systems can prohibit spray gun operation unless ventilation system is operating
- If spray booth ventilation is not operated during spraying, overspray is much more likely to leave through an opening or can accumulate and be tracked out of the booth
- ACGIH Industrial Ventilation guidelines for paint spraying operations identifies use of interlock of exhaust fan with compressed air source to spray gun

Initial Concept

- Require interlock system between compressed air source and ventilation system within six months of rule amendment



Bench Spray Booths

Background

- Bench spray booths are designed with raised work areas where operators are standing outside of the booths
- Coating particles from spraying and dried coating activities that are conducted outside of a bench spray booth work area may not be captured by the booth

Initial Concept

- All coating spraying and dried coating removal activities conducted in bench spray booths must be conducted within the work areas



Background

- Dried coatings activities refers to
 - Removal of dried coatings through sanding, scuffing, or other mechanical methods
 - Demasking
- Once parts are coated, some of the coating may be removed to prepare parts for the next step in the manufacturing process
 - Can create dust particles containing hexavalent chromium that can become fugitive emissions
- Masking tape or other masking materials may be applied to parts to prevent coatings from adhering to specific sections
 - Dried coatings on waste masking materials can flake and be a source of fugitive emissions if the materials are disturbed



Initial Concepts

- Require dried coating activities to be conducted within buildings
- Eventually require that activities be vented to air pollution control devices with a control efficiency of not less than 99.97% on 0.3 micron particles, or greater
 - Air pollution control devices may include spray booths, downdraft tables, permanent total enclosures, or other devices that can effectively capture coating particles
- Air pollution control devices should be designed in accordance with most current version of ACGIH Industrial Ventilation guidelines
- Install pressure gauge on control devices to measure the pressure differential across filter(s)
- Immediately place waste masking material in closed, non-porous containers

Proposed compliance timeline presented in subsequent slide



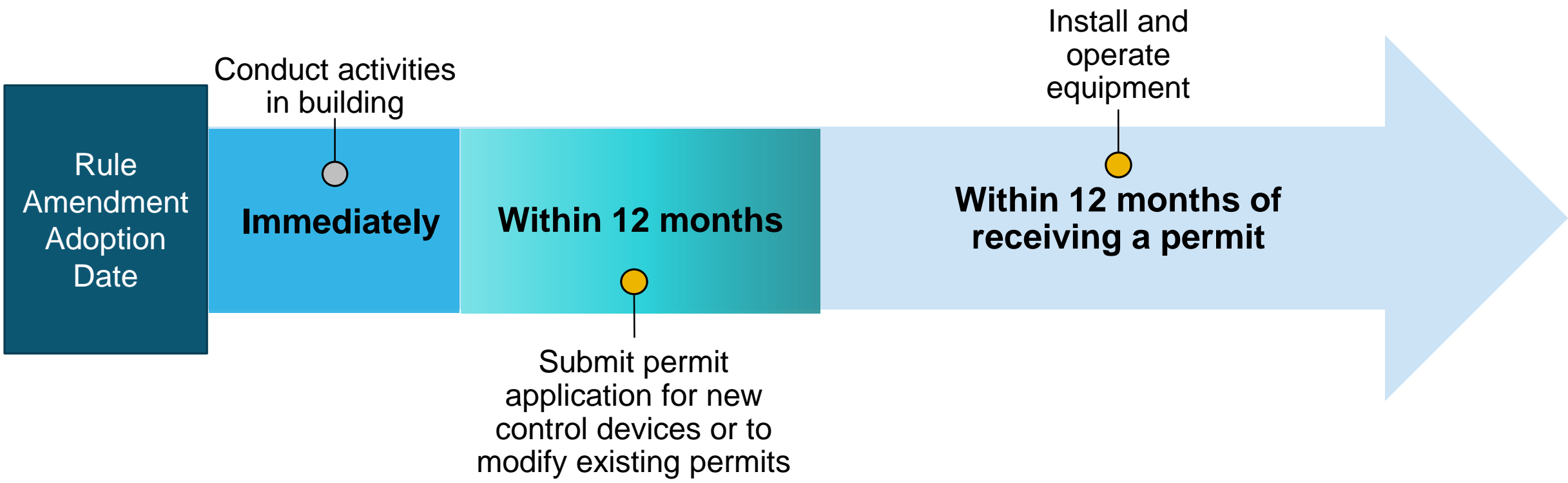
Proposed Compliance Timeline

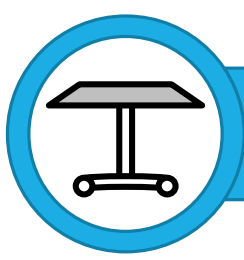
- Immediately after rule amendment, all dried coating activities are required to be conducted within buildings
- One year after rule amendment, facilities must:
 - Submit permit applications to modify existing air pollution control devices to allow for the activities to be vented to air pollution control devices
 - Submit permit applications for new air pollution control devices
- If permit conditions allow conducting dried coating activities, operator can vent activities to existing permitted air pollution control devices
- Facilities have one year after a permit is issued to install and operate air pollution control devices



Dried Coating Operations

Proposed Compliance Timeline for Dried Coating and Demasking Activities



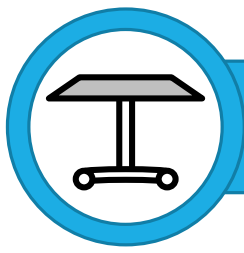


Support Equipment Used During Spraying Activities

Background

- Dried coatings may accumulate on equipment such as racks or stands used to hold or support parts during spraying activities
- Pieces of the accumulated coatings can drop off onto the ground as equipment moves throughout the facility and during storage
- Chromium laden pieces can be crushed into smaller particles through vehicular and foot traffic, potentially becoming fugitive emissions





Support Equipment Used During Spraying Activities

Initial Concepts

- Store equipment indoors in clearly marked storage areas
- If equipment needs to be transported throughout the facility, establish and clearly mark the transit paths
 - Example: tape can be used to delineate paths
- On days when support equipment is used for chromium coating spraying, conduct daily cleaning of identified storage areas and transit paths



Paint Mixing

Paint Mixing Activities

Background

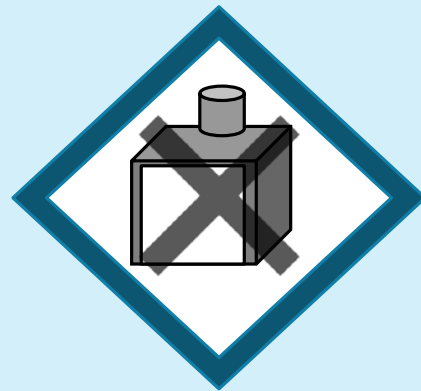
- During paint mixing, drops of paint can fall on the ground or other surfaces
- If not cleaned immediately, the paint will dry and can become fugitive emissions

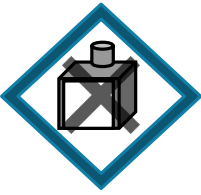
Initial Concepts

- During paint mixing, wipe away any wet paint droplets on surfaces
 - Wet paint should be removed before it dries



Potential Prohibition of New Open Face Spray Booths





Potential Prohibition of New Open Face Spray Booths

Background

- Fugitive emissions are minimized in enclosed spray booths

Initial Concept

- Considering provisions that require walk-in and bench spray booths that are permitted after rule amendment must be
 - Enclosed spray booths; or
 - Located in enclosures vented to air pollution controls with a control efficiency of not less than 99.97% on 0.3 micron particles, or greater
- Prohibition would not apply to existing permitted spray booths

Visual Monitoring





Visual Monitoring – Background

- Regular visual monitoring can ensure equipment and pollution controls are working properly to minimize fugitive emissions
- Pollution controls may not properly capture coating particles due to:
 - Filters that have leaks or tears, or are improperly seated
 - Clogged filters
 - Leaks in enclosures and ducting
- Rule 1469.1 currently requires weekly inspections of control equipment and filter media for leaks, torn filters, or improperly seated filters [paragraph (k)(1)]
 - Inspection requirements are not standardized
 - Other aspects of control equipment should also be inspected regularly



Visual Monitoring – Initial Concepts

- Maintain weekly visual monitoring requirement for filter media and include weekly inspections of other items including:
 - Ductwork integrity
 - Spray booth integrity
 - Access doors (if applicable)
 - Overspray outside the booth
- Staff to develop a standardized checklist for facilities
 - Incorporate concepts from Thermal Spraying ATCM

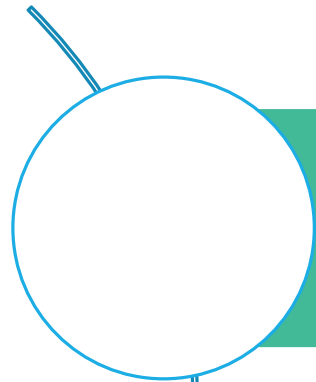
✓ Acceptable
X Unacceptable

Item to be Inspected	Look For -	Dates of Inspection:			
1. Hoods	Dents, holes, corrosion				
2. Ductwork	Dents, holes, corrosion				
	Blockages, plugging				
3. Dampers	Deterioration of seals/gaskets				
	Settings				
4. Access doors	Deterioration of seals/gaskets				
	Gaps when door is closed				
5. Fan housing	Deterioration of seals/gaskets				
	Gaps in connection to ductwork				
6. Dry filter media	Holes, gaps, abrasions				
	Does filter need to be changed?				
	Dust on clean side of filter?				
7. Dry filter mounting frame	Deterioration of seals/gaskets				
8. Other items inspected (provide descriptions):					
Example checklist					
9. Corrective actions (provide descriptions & dates):					
10. Initials of person doing inspection:					

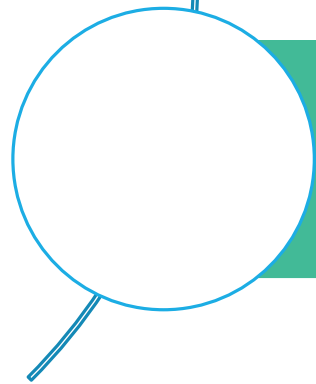
Summary of Staff Proposals

Updated air velocity standards	<ul style="list-style-type: none">• Average velocity measured at the filter face of enclosed booths at the open face of open face booths<ul style="list-style-type: none">• Individual measurement points cannot be below minimum
Parameter monitoring compliance schedules	<ul style="list-style-type: none">• Compliance schedules for meeting air velocity and pressure differential standards• Install pressure differential alarm system one year after rule amendment
Fugitive emissions control concepts	<ul style="list-style-type: none">• Introduced concepts for spray booth best management practices, dried coating operations, support equipment, and paint mixing
Potential prohibition of new open face spray booths	<ul style="list-style-type: none">• Requirement that new open face booth cannot be permitted after rule amendment adoption under consideration
Visual monitoring	<ul style="list-style-type: none">• Conduct weekly visual monitoring of spray booths and other items

Next Steps



Present Proposed Rule Language



Governing Board Meeting – Anticipated
for Second Quarter 2021

PAR 1469.1 Staff Contacts

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