

Proposed Rule 1435 – Control of Toxic Air Contaminant Emissions from Metal Heating Operations

WORKING GROUP MEETING #6



**September 5, 2024
9:00 AM (PDT)
South Coast AQMD
Diamond Bar, CA**

Join Zoom Webinar Meeting

<https://scaqmd.zoom.us/j/96825066787>

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Agenda

- Summary of Working Group Meeting #5
- Update on Furnaces
- PR 1435 Process Update
- Proposed Initial Recommendations for Furnace Requirements
- Meeting Recap

Summary of Working Group Meeting #5

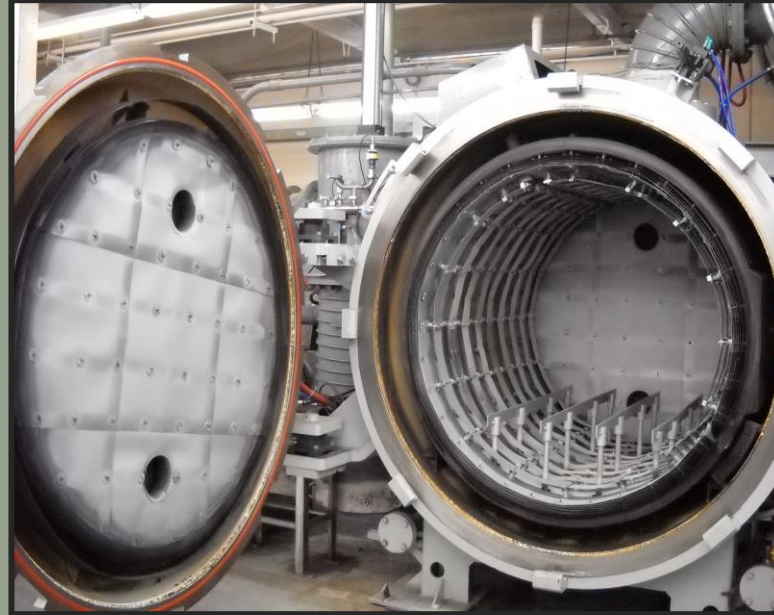
- Working Group Meeting #5 discussed detailed rule concepts for:
 - Fugitive emission controls
 - Building enclosure requirements
 - Quench tanks
 - Prohibitions
 - Exemptions
- Comments from WGM #5 will be discussed in a future working group meeting

Types of Furnaces



Air Furnaces heat metals in an ambient air atmosphere where oxygen is present

(Previously called “uncontrolled atmosphere” furnaces)



Vacuum furnace



Endothermic furnace

Non Air Furnaces typically heat metals in a controlled atmosphere to avoid exposing the workpiece to ambient air during the heating process (*previously called “controlled atmosphere” furnaces*)

- Includes vacuum furnaces, endothermic furnaces, hydrogen furnaces, or furnaces that use inert gases in the furnace chamber, such as nitrogen, helium, or argon

Types of Furnaces *(continued)*

- Stakeholders commented that non air furnaces have little to no scaling/oxidation and should not be subject to all proposed rule requirements
- Staff conducted site visits at 3 facilities with non air furnaces and is in the process of gathering more information to inform rule requirements
- PR 1435 requirements are based on designated facility classes (presented as facility “Tiers” in previous WGMs)
 - Higher classes correspond with higher emissions potential, and are subject to more controls
- Class criteria is being reviewed and may be modified pending findings from non air furnaces

Proposed Changes to Facility Classes

Presented in WGM #5

Tier	Criteria
3	<ul style="list-style-type: none"> ≥17 uncontrolled atmosphere furnaces Process Cr alloys (≥0.5% Cr by weight)
2	<ul style="list-style-type: none"> ≥8 furnaces (both controlled and uncontrolled atmosphere) Not a Tier 3 facility Other Cr alloys that may be present in furnaces (e.g., support racks, rotary furnace components)
1	<ul style="list-style-type: none"> ≤7 furnaces (both controlled and uncontrolled atmosphere) OR Confirmation of no Cr alloys present in furnaces (e.g., box-type furnaces with no Cr alloy support racks)



Current Proposal

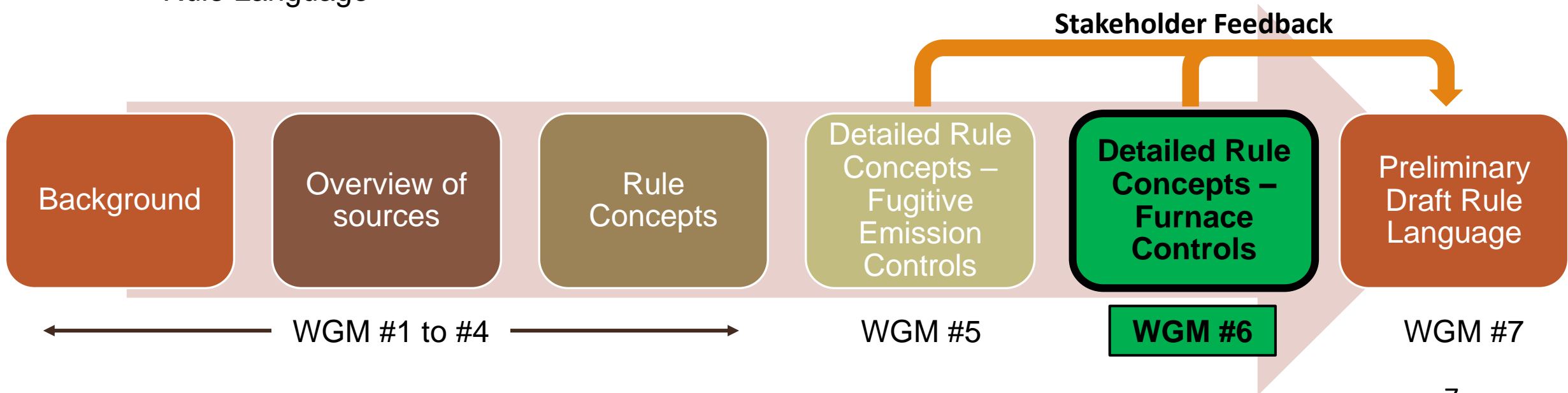
Class	Criteria *
4	<ul style="list-style-type: none"> ≥17 air furnaces that process Cr alloys (≥0.5% Cr by weight)
3	<ul style="list-style-type: none"> ≥8 air furnaces that is not a Class 4 facility ≥17 applicable furnaces with at least one air furnace
2	<ul style="list-style-type: none"> ≤7 air furnaces that process Cr alloys All applicable facilities that are not in Classes 1, 3, or 4
1	<ul style="list-style-type: none"> ≤7 air furnaces that don't process Cr alloys Exclusively non air furnaces

Classes/criteria may change pending additional data on non air furnace emissions potential

*** Applies to furnaces with maximum operating temperature of ≥1250°F**

Overview of Working Group Meeting #6

- This WGM will present detailed rule concepts on furnace requirements for facilities with the highest emissions potential (Class 4 facilities)
- Responses to WGM #5 comments and changes to proposed rule requirements will be discussed in subsequent working group meeting
- Intent is to incorporate comments received today and from WGM #5 into Initial Preliminary Draft Rule Language





Class 4 Facility Metal Heating Furnace Requirements

Background

- Class 4 facilities are facilities that have the highest potential to emit hexavalent chromium
 - ≥ 17 air furnaces that process chromium alloys ($\geq 0.5\%$ Cr by weight)
 - Estimated four facilities in South Coast AQMD
- Class 4 facilities would be required to address emissions from furnaces by at least one of four compliance options
- Compliance options were developed from feedback received during previous WGMs and meetings and discussions with stakeholders

Key Definitions

Exceedance Event	<p>An event where three consecutive Valid Samples exceed the Hexavalent Chromium Threshold</p> <ul style="list-style-type: none">• Begins the day of the first Valid Sample exceeding the Hexavalent Chromium Threshold and ends 30 calendar days thereafter
Hexavalent Chromium Threshold	<p>A Hexavalent Chromium concentration of greater than 1.0 ng/m³</p>
Natural Draft Opening	<p>Any permanent opening in a Permanent Total Enclosure that remains open during operation of the facility and is not connected to a duct in which a fan is installed</p> <ul style="list-style-type: none">• <i>From EPA Method 204 definition</i>

Initial Recommendations for Class 4 Compliance Options

- Class 4 facilities would have 4 compliance options:

Option A

Capture and Control:
PTEs vented to HEPA

Option B

Capture and Control:
Furnace exhausts vented to
HEPA

Option C

Demonstrate low emissions
and low health risk

Option D

Fenceline air monitoring

Initial Recommendations

Option A. PTEs Vented to HEPA

Operate Metal Heating furnaces within a Permanent Total Enclosure (PTE) that is vented to an Air Pollution Control Device (APCD) equipped with HEPA filters or better

Potential PTE and APCD requirements listed in subsequent slides

Compliance Dates

- On or before [6 months after Date of Rule Adoption], submit complete permit applications
- No later than two calendar years after a Permit to Construct has been issued or [36 months after Date of Rule Adoption], whichever date is earlier, have a fully operating PTE and APCD

Initial Recommendations

Inward Air Velocity

A facility with a PTE shall demonstrate an inward air velocity of at least 200 feet per minute at each Natural Draft Opening including, but not limited to, vents, windows, passages, doorways, bay doors, and rollups at least once per calendar quarter

- Maintain a list of the openings considered Natural Draft Openings

Inspections

Inspect any Permanent Total Enclosure at least once a calendar month for breaks, cracks, gaps, or deterioration that is not a Natural Draft Opening that could cause or result in Fugitive Metal Dust emissions

Initial Recommendations

Repairs Needed

- If inspection of a PTE reveals a break, crack, gap or deterioration that have the potential to result in Fugitive Metal Dust emissions, facility may finish Metal Heating operations that are in progress, and then must cease operations until repairs are made
- Repair any breaks, cracks, gaps, or deterioration that have the potential to result in Fugitive Metal Dust emissions from any Permanent Total Enclosure within 72 hours of discovery
- A facility may resume operations prior to repair of the total enclosure, if temporary measures are implemented that ensure no Fugitive Metal Dust emissions result from the break, crack, gap or point of deterioration.

Initial Recommendations

Option B. Emission Collection System vented to HEPA

Vent the exhaust of Metal Heating furnaces to an Emission Collection System that is vented to an Air Pollution Control Device equipped with HEPA filters or better

Compliance Dates

- On or before [6 months after Date of Rule Adoption], submit complete permit applications
- No later than two calendar years after a Permit to Construct has been issued or [36 months after Date of Rule Adoption], whichever date is earlier, have a fully operating ECS and APCD

Initial Recommendations

Capture Velocity

- Minimum capture velocity would be dependent on the design of the Emission Collection System and should be at least 95% or greater than the capture velocity measured during the most recent valid source test

Visible Emissions

Facility shall ensure visible emissions from a Metal Heating furnace do not escape from the collection location(s) of an Emission Collection System

Initial Recommendations

Smoke Test

For each Emission Collection System, the facility shall conduct and pass a smoke test during each source test, and additionally once every 180 days after the initial source test

Smoke test procedure to be included in rule appendix

Initial Recommendations

Requirements for Air Pollution Control Devices

- Conduct a source test every five years

For baghouses (i.e., APCDs designed to remove particulate matter from a gas stream):

- Operate a Bag Leak Detection System regardless of size and position within a series of emission control devices, pursuant to the Tier 3 requirements of Rule 1155 – Particulate Matter (PM) Control Devices

For APCD filters:

- Use a gauge equipped with a continuous data acquisition system to continuously monitor pressure drop across each filter stage of the APCD

Initial Recommendations

Extension of Compliance Deadline

- Facility may submit a request to the Executive Officer to extend the compliance deadline up to 36 months to install APCD
- Request must have been submitted at least 90 calendar days before the applicable deadline(s) and must include:
 - Identification of the equipment for which a time extension is needed
 - Time extension is needed for reasons beyond facility's control (e.g. electrical upgrade of substation)
 - Progress of implementation of the measure(s); and
 - The length of time requested
- Extensions may be required due to upgrades needed to electrical infrastructure, and other reasons that may be beyond a facility's control

Initial Recommendations

Approval of Extension of Compliance Deadline

- The Executive Officer will approve or disapprove the request for a time extension based on the following criteria:
 - The facility submitted the request in compliance with the listed requirements; and
 - The facility provided sufficient details identifying the extenuating circumstances that necessitate additional time to complete implementation that is beyond the control of the facility

Initial Recommendations

Option C. Demonstrate Low Health Risk

A Health Risk Assessment approved by the South Coast AQMD demonstrates that the health risks **associated with its Metal Heating operations** do not exceed the notification risk level under Rule 1402 – Control of Toxic Air Contaminants from Existing Sources

- Rule 1402 notification risk level is a Maximum Individual Cancer Risk of 10 in 1,000,000 or a total acute or chronic hazard index of 1.0
- Submit HRA on or before [6 months after Date of Rule Adoption]

- Health risk would be determined through South Coast AQMD's AB 2588 program
- Option C is more viable for facilities that are currently in the AB 2588 health risk assessment process
- Facilities choosing this option may be required to conduct source testing, and must submit emissions data and other information as requested

Seeking stakeholder input:

Is Option C a feasible/practical compliance option?

Initial Recommendations

Option D. Fenceline Air Monitoring

No later than [12 months after Date of Rule Adoption] submit a Fenceline Air Monitoring Plan to monitor ambient Hexavalent Chromium levels pursuant to the requirements listed in the rule

Subsequent slides provide detail on proposed fenceline air monitoring requirements

Background

- Stakeholders requested fenceline air monitoring as a compliance option
- Fenceline air monitoring is a viable option provided monitoring is conducted for an extended length of time and additional measures are required for threshold exceedances
- The proposed recommendations include:
 - Initial requirements for more comprehensive monitoring (Phase I) that can be scaled down (Phase II), provided certain criteria are met
 - Offramp from monitoring
 - Additional requirements and measures when threshold is exceeded

Initial Recommendations

Submittal and Approval of a FAMP

- No later than [90 days after Date of Rule Adoption], a facility choosing to comply with fenceline air monitoring shall submit a Fenceline Air Monitoring Plan and accompanying plan application to conduct Phase I monitoring
 - Subject to plan fees specified in Rule 306 – Plan Fees
- Within 30 calendar days after disapproval of the Fenceline Air Monitoring Plan, the facility shall resubmit a revised plan to the Executive Officer that includes any information necessary to address deficiencies
- If the resubmitted Fenceline Air Monitoring Plan is denied, the facility shall implement the Fenceline Air Monitoring Plan as modified and approved by the Executive Officer

Initial Recommendations

Requirements for Phase I Monitoring

Placement of Monitors:

Monitor hexavalent chromium emissions at a minimum of three monitoring sites downwind of the emission source(s) that represent the locations of highest impact near the facility fenceline, with two sites located at 6-10 feet above grade and one site located at 20-30 feet above grade, at a frequency of at least once every three days

Upwind Monitor

Monitor hexavalent chromium emissions at a minimum of one monitoring site located upwind of the emission source(s) at a frequency of at least once every three days

Initial Recommendations

FAMP Requirements cont'd

Sample Collection:

Collect a sample at each monitoring site concurrently, from midnight-to-midnight or in accordance with the timeframe specified in the approved Fenceline Air Monitoring Plan provided the total sampling time is no less than 23 hours and no greater than 25 hours

Initial Recommendations

FAMP Requirements cont'd

Wind Sensor

Install a wind sensor to collect wind speed and direction data

Recording Concentrations

No later than 14 days after the date of sampling, record the hexavalent chromium concentration

Listed Information

The FAMP shall include information listed in an appendix in PR 1435

- Information such as inventory of equipment, facility map(s), persons involved in monitoring and sampling and their role, standard operating procedures, etc.

Initial Recommendations

FAMP Implementation

- Beginning 90 days after approval of the Fenceline Air Monitoring Plan, the facility shall implement the approved FAMP, unless the approved FAMP specifies a different start date
- The facility shall operate equipment pursuant to manufacturer specifications and instructions
- The facility shall notify the Executive Officer by calling 1-800-CUT-SMOG by the 15th of the following month if more than two invalid samples have been recorded for a monitoring site in a calendar month
 - Frequent invalid samples can extend duration of fenceline monitoring

Initial Recommendations

Required Actions After Hexavalent Chromium Threshold Exceedances

- The facility shall notify the Executive Officer by calling 1-800-CUT-SMOG for any Valid Sample exceeding the Hexavalent Chromium Threshold within 24 hours of receiving the sample result
- For the third consecutive Valid Sample exceeding the Hexavalent Chromium Threshold, the facility shall:
 - Within 24 hours of receiving the third Valid Sample result, notify the Executive Officer by calling 1-800-CUT-SMOG and provide the above information
 - Within 14 calendar days of receiving the third Valid Sample result, submit a written report that provides an explanation of the cause(s) of the exceedances, to the extent known

Initial Recommendations

Threshold Exceedance Not Attributed to Facility

- A Valid Sample that exceeds the threshold may not be counted towards an Exceedance Event if the facility can demonstrate that it did not cause the exceedance
- The facility must provide credible evidence to the Executive Officer within 30 days of receiving the sample result, such as upwind/downwind monitoring data and supporting meteorological data, etc.
- Final determination to be made by the Executive Officer

Initial Recommendations for Corrective Measures After Exceedance Events

For each Exceedance Event, the facility shall implement **at least one** of the following measures within 180 days of the beginning of the Exceedance Event:

More frequent cleaning of furnace chambers

Further enclose Metal Heating operations

Capture and control 20% of furnaces

Initial Recommendations for Corrective Measures After Exceedance Events

More Frequent Cleaning of Furnace Chambers

Clean furnace chamber surfaces to remove all loose debris at least once every 3 calendar months if the furnace is in operation on one or more days in the three-month period

- Within 180 days of the beginning of the Exceedance Event, the facility shall submit a complete permit application(s) to include enforceable conditions in a Permit to Operate(s) or facility permit

Initial Recommendations for Corrective Measures After Exceedance Events

Further Enclose Metal Heating Operations

Enclose Metal Heating operations with a permanent structure and beyond the requirements specified in the Building Requirements subdivision

- Within 180 days of the beginning of the Exceedance Event, the facility shall notify the Executive Officer that the Metal Heating operations will be further enclosed
- Complete construction of the permanent structure no later than 12 months after the notification

Initial Recommendations for Corrective Measures After Exceedance Events

Capture and Control 20% of Furnaces

Capture and control emissions from at least 20% of the number of Metal Heating Furnaces

- Within 180 days of the beginning of the Exceedance Event, the facility shall submit a complete permit application(s) for an Air Pollution Control Device
- Operate the APCD no later than 36 months of the beginning of Exceedance Event
- APCD would be subject to same requirements previously discussed (e.g., capture efficiency, bag leak detection, etc.)
- May request compliance deadline extension request for delays not under facility control

Initial Recommendation

Phase II Fenceline Air Monitoring

After conducting fenceline air monitoring for at least 12 calendar months, the facility may elect to remove air monitor(s) provided:

- No Exceedance Event occurred for the preceding 12 calendar months at the monitor proposed to be removed
- No more than two invalid samples have been recorded in a calendar month for the preceding 6 months at the monitor proposed to be removed
- At least one downwind monitor located near or at the facility fenceline remains in place
- The owner or operator submits a draft Phase II Fenceline Air Monitoring Plan for approval
- The Executive Officer has approved, or modified and approved, the Phase II Fenceline Monitoring Plan

Initial Recommendation: Stopping Fenceline Air Monitoring

Stopping Fenceline Air Monitoring

A facility may elect to stop conducting fenceline air monitoring provided:

- The Phase II fenceline air monitoring has been in place for at least three calendar years
- An Exceedance Event has not occurred within the preceding 24 calendar months
- No more than two invalid samples have been recorded in a calendar month for the preceding 6 months
- An extension of time to implement additional control has not been requested
- The owner or operator submits a request for approval, and the Executive Officer has approved the request

Initial Recommendation: Potential Resumption of Fenceline Air Monitoring

Resumption of Fenceline Air Monitoring

A facility that has stopped fenceline air monitoring shall recommence Phase II Monitoring if there is an increase in Metal Heating capacity or throughput limits that result in an increase of emissions of hexavalent chromium (compared to their conditions during the end of the last Phase II Monitoring) as determined pursuant to Rule 1401 – New Source Review of Toxic Air Contaminants

Furnace Emissions: Concepts for Class 1, Class 2, & Class 3 Facilities

Proposed Metal Heating Facility Classes

Class	Criteria*
4	<ul style="list-style-type: none"> • ≥ 17 air furnaces that process Cr alloys ($\geq 0.5\%$ Cr by weight)
3	<ul style="list-style-type: none"> • ≥ 8 air furnaces that is not a Class 4 facility • ≥ 17 applicable furnaces with at least one air furnace
2	<ul style="list-style-type: none"> • ≤ 7 air furnaces that process Cr alloys • All applicable facilities that are not in Classes 1, 3, or 4
1	<ul style="list-style-type: none"> • ≤ 7 air furnaces that don't process Cr alloys • Exclusively non air furnaces

Increasing Requirements

***Applies to furnaces with maximum operating temperature of $\geq 1250^{\circ}\text{F}$**

Initial Recommendations for Class 1 and Class 2 Facilities

- No later than [6 months after Date of Rule Adoption], the owner or operator of a Class 1 or Class 2 Facility shall submit the following information to the Executive Officer:
 - Metal alloys processed at the facility and annual throughput of each
 - Number of air/non air furnaces
 - Furnace ratings, size, and capacity
 - Furnace chamber dimensions
 - Metal alloys processed in each furnace
 - Maximum operating temperature of each furnace
 - Number of quench tanks and quench media used in each tank
 - Physical dimensions of each quench tank
 - List of alloys quenched in each quench tank

Initial Recommendations for Class 3 Facilities

Comply with Class 4 compliance options

OR

No later than [18 months after Date of Rule Adoption], conduct source testing for hexavalent chromium and multi-metals on at least 20 percent of Metal Heating furnaces, based on the total number of furnaces

Submit equipment and operations information to South Coast AQMD

- Same information required of Class 2 or Class 1 facilities (refer to Slide 40)

Outline of Process to Identify Furnaces for Source Testing

- Facility to propose the candidate furnaces for source testing
 - Executive Officer will review and approve
- Goal is to identify candidate furnaces that are representative of operations, including
 - Types and processes (e.g., sample of box air type, rotary, endothermic, vacuum, etc.)
 - Heat ratings
 - Composition of racks and/or internal furnace components
- Source test protocol will identify metals to be heated in identified furnaces

Working Group Meeting #6 Recap

- Discussed initial rule recommendations addressing emissions from furnaces
 - For Class 4 facilities, provided details on the four compliance options:
 - Capture and control using PTEs vented to HEPA
 - Capture and control furnace exhausts and vented to HEPA
 - Demonstrate a low health risk through the AB 2588 process
 - Fenceline monitoring
 - Provided detailed rule concepts for Class 1-3 facilities

Next WGM will provide and discuss Initial Preliminary Draft Rule Language

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Rule 1426

Emissions from Metal Finishing Operations

Rule 1426.1

Point Source Emissions from Hexavalent Chromium Metal Finishing Operations

Rule 1435

Control of Emissions from Metal Heat Treating Processes

Rule 1460

Control of Particulate Emissions from Metal Recycling and Shredding Operations

Rule 1466

Toxic Air Contaminant Emissions from Decontamination of Soil

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