Proposed Rule (PR) 1407.1
Control of Toxic Air Contaminant Emissions from Chromium Alloy Melting Operations

Working Group Meeting #12
September 10, 2020

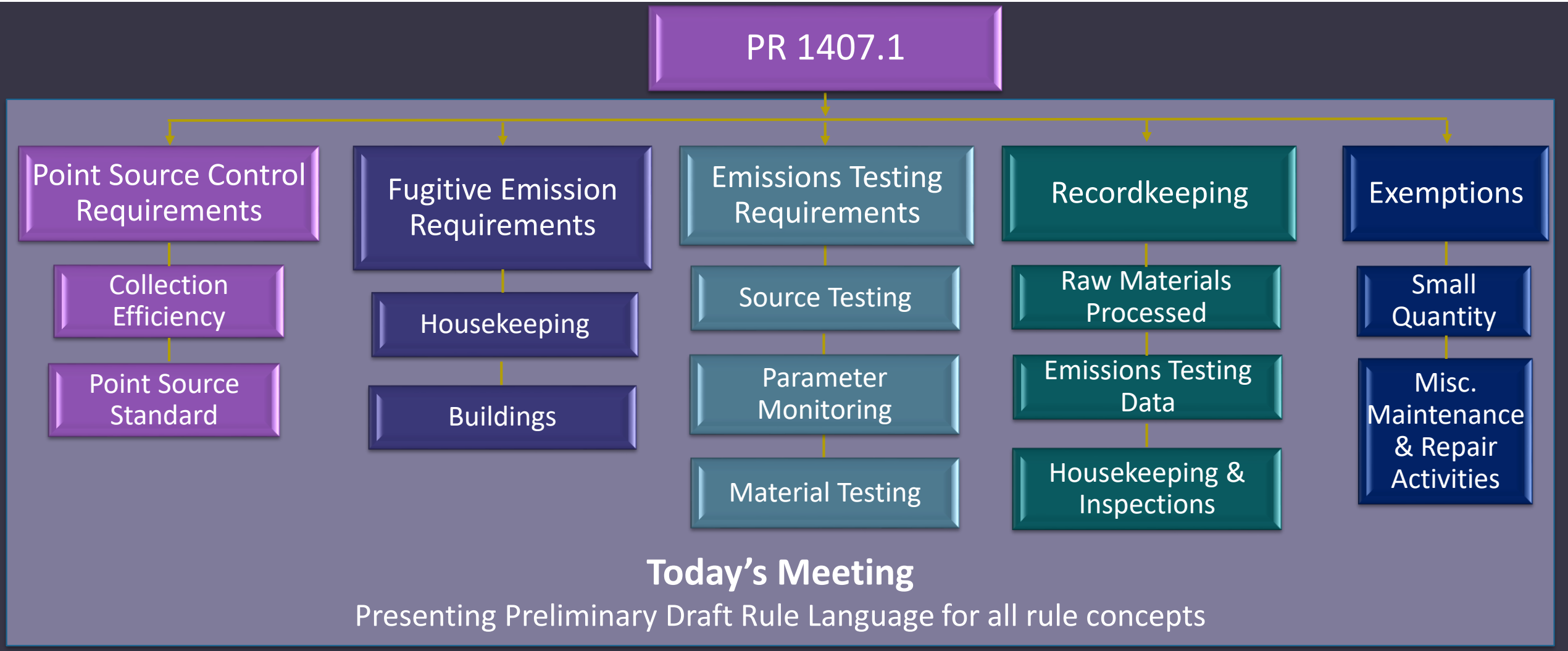
Join Zoom Meeting
https://scaqmd.zoom.us/j/91212024264
Meeting ID:
912 1202 4264
Passcode:
414126

Agenda

- Previous Working Group Meeting
  - Summary
  - Stakeholder Comments
- Preliminary Draft Rule Language
- Next Steps




General Overview of PR 1407.1



Today's Meeting

Presenting Preliminary Draft Rule Language for all rule concepts

Summary of Previous Working Group Meeting

Summary of Proposed Testing and Monitoring Requirements

Source Testing

Periodic source testing*
- 48 months after initial source test and every 48 months thereafter

* Exploring extension of periodic source test frequency for operators that successfully conduct parameter monitoring requirements

Parameter Monitoring

- Measure pressure across filter media
- Install bag leak detection system
- Verify collection efficiency using anemometer
- Conduct smoke test

Material Testing for Non-Ferrous Metals

Confirm non-ferrous chromium alloys contain <0.002% arsenic and <0.004% cadmium

Summary of Recordkeeping Requirements and Exemptions

Recordkeeping

Record the following information and maintain records for 3 years:

- Process quantities
- Testing and monitoring data
- Activities conducted as required by rule provisions

Keep on-site and make available to South Coast AQMD upon request

Exemptions

Exempt from all requirements except recordkeeping if:

- Facility melts less than 1 ton of chromium alloy(s) per year

Exempt from all requirements:

- Universities, jewelers, and artists
- Maintenance and repair activities not related to metal melting and handling operation
- Equipment subject to Rules 1420.1 and 1420.2

Stakeholder Comments

Stakeholder Comment	Staff Response
Requested that the periodic source test frequency be extended to every 60 months if an operator meets all proposed parameter monitoring requirements	Staff is exploring an extension to the periodic source test frequency for operators that successfully conduct parameter monitoring requirements
Request definitions for different types of scrap to address non-ferrous materials subject to proposed arsenic and cadmium content limits	Staff will include definitions and criteria for scrap material in non-ferrous melting

Preliminary Draft Rule Language

Preliminary Draft Rule Language

Rule language based on initial rule concepts with input from stakeholders

Preliminary Draft Rule has actual rule language for the proposed rule

Opportunities remain to revise rule language as rule development process progresses

Requesting stakeholder input and further information

Purpose (a) and Applicability (b)

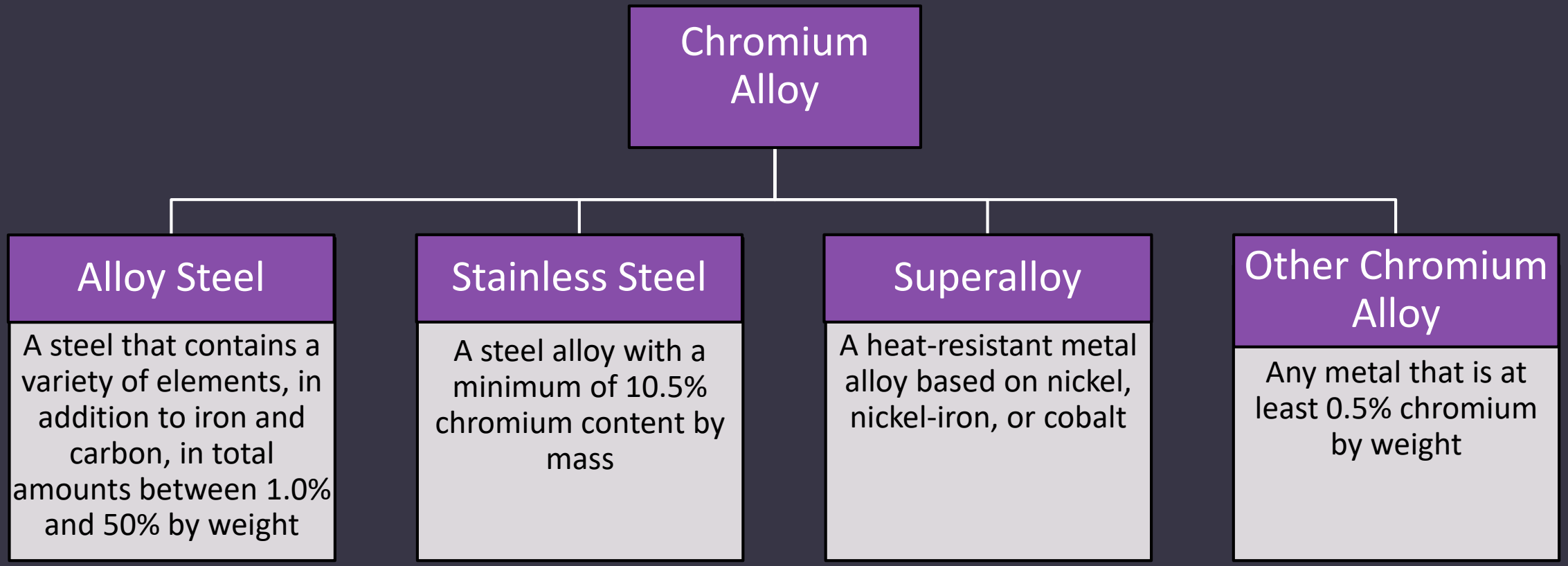
- Purpose (a)
  - Reduce toxic air contaminant emissions from chromium alloy melting operations
- Applicability (b)
  - Owner or operator of a facility conducting chromium alloy melting, including
    - Primary and secondary smelters
    - Foundries
    - Die-casters
    - Other miscellaneous melting processes

Definitions (c)

- Definitions that are used in other toxic metal rules are incorporated in PR 1407.1 to define equipment, activities, and processes related to chromium alloy melting, and other rule terms
- New or modified definitions specific to PR 1407.1 include
  - Aggregate Hexavalent Chromium Mass Emissions
  - Alloy Steel
  - Chromium Alloy
  - Chromium Alloy Melting Operation
  - Customer Returns
  - Lost Casting Wax
  - Non-ferrous Metal
  - Rerun Scrap
  - Scrap
  - Stainless Steel
  - Superalloy
  - Used Casting Sand

Key Definitions (c) – Chromium Alloys

- Chromium Alloy includes any metal with has a chromium content greater or equal to 0.5%, including alloy steel, stainless steel, superalloys, or other chromium alloy



Key Definitions (c) – Non-Ferrous Metals and Scrap

NON-FEROUS METAL

- Contains less than 1% iron by weight
- Includes aluminum, copper, gold, lead, silver, tin, and zinc

SCRAP

- Any metal material that has been discarded or removed from its end use and is intended for reprocessing

RERUN SCRAP

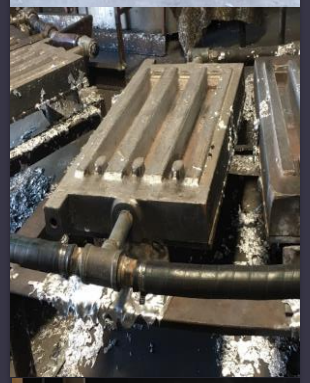
- Generated as a result of the casting or forming process at the chromium alloy melting facility
- Intended for remelting and has not been coated or surfaced with any material
- If generated offsite, must be of materials generated from the chromium alloy melting facility (confirm with documentation)

CUSTOMER RETURNS

- Any material generated prior to resale or further distribution
- Includes documentation confirming material contains <0.002% arsenic and <0.004% cadmium

Excluded from SCRAP definition

Key Definitions (c) – PR 1407.1 Operations and Processes



- CHROMIUM ALLOY MELTING OPERATION is any process conducted to manufacture metallic products using chromium alloy(s), including, but not limited to:
  - Chromium alloy melting furnace
  - Casting
  - Metal grinding
  - Metal cutting
- LOST CASTING WAX AND USED CASTING SAND describe casting materials exposed to the casting process
- AGGREGATE HEXAVALENT CHROMIUM MASS EMISSIONS describes the emission limits that will be proposed in PR 1407.1

Emission Control Requirements (d) – Hexavalent Chromium

- All chromium alloy melting furnaces and associated emission control devices would be required to meet the aggregate hexavalent chromium emission limit
  - Limits based on distance to nearest sensitive receptor
  - Same limits proposed at Working Group Meeting #9, converted from pounds/hour to milligrams/hour
- Demonstrate emission limit through a source test no later than July 1, 2022

Paragraph (d)(1)

Table 1: Aggregate Hexavalent Chromium Emission Limits

Distance to Sensitive Receptor[1] (meters)	Aggregate Hexavalent Chromium Emission Limit (milligrams per hour)
Less than 50	0.40
50 to 100	1.5
Greater than 100	1.8

[1] Distance shall be measured, rounded to the nearest meter from the stack or centroid of stacks to the property line of the nearest sensitive receptor.

Aggregate means sum of the hexavalent chromium mass emissions in milligrams per hour from all chromium alloy melting furnaces and associated emission control devices

Emission Control Requirements (d) – Arsenic and Cadmium

- Arsenic and cadmium emission control requirements only apply to non-ferrous chromium alloy melting
- Arsenic and cadmium content limits similar to Rule 1407 and the state Air Toxics Control Measure (ATCM) for Non-Ferrous Metal Melting
- Open to exploring compliance options for non-ferrous metals

Paragraph (d)(2)

Toxic Air Contaminant	Content Limit for All Non-Ferrous Chromium Alloys
Arsenic	No more than 0.002% weight
Cadmium	No more than 0.004% weight

Emission Control Requirements (d) – Visible Emissions and Exhaust Stacks

- Paragraphs (d)(4) & (d)(5) – Requirements for visible emissions
  - Do not discharge any air contaminant into the air for more than three minutes per hour that is:
    - Half as dark or darker than Number 1 on the Ringelmann Chart
    - 10% opacity or more
  - Ensure visible emissions do not escape from the collection location(s) of an emission collection system(s)
- Paragraph (d)(6) – New or modified exhaust stacks
  - Do not install a new stack or modify a stack to allow emissions to be released in a horizontal direction

Housekeeping Requirements (e) – Key Definitions

Revised Concept

- Paragraph (c)(3) – Approved Cleaning Method
  - Consists of wet wash, wet mop, damp cloth, dry sweeping with use of dust suppressing sweeping compounds, low pressure spray, or vacuum equipment with filter(s) rated by the manufacturer to achieve a 99.97% control efficiency for 0.3 micron particles
    - Paragraph (c)(16) – Dust Suppressing Sweeping Compound
      - Non-grit-, oil- or waxed, or water-based materials used to minimize dust from becoming airborne during dry sweeping

Housekeeping Requirements (e) – Material Storage and Transport

- Effective July 1, 2021

Subparagraph	Housekeeping Requirement
(e)(1)(A)	Store metal-containing materials capable of generating fugitive metal dust emissions in an enclosed storage area, in a building at least 20 feet away from an opening, or closed containers
(e)(1)(B)	Transport metal-containing materials in covered containers
(e)(1)(C)	Collect materials captured by an emission control device into sealed containers
(e)(1)(D)	Enclose all filter media of emission control devices associated with chromium alloy melting operations at all times while in use

Housekeeping Requirements (e) – Routine Cleaning

- Effective July 1, 2021, conduct cleaning using an approved cleaning method

Daily **Subparagraph (e)(1)(E)**	**Weekly** **Subparagraph (e)(1)(F)**
All floor areas within 20 feet of: • Chromium alloy melting operation(s)	All floor areas within 20 feet of: • Placement or storage of raw materials and finished product • Emission collection and emission control device associated with chromium alloy melting operation(s) • Equipment for handling, mixing, reclaiming, or storing casting sand or wax • Storage, disposal, recovery, or recycling of waste generated from casting, housekeeping activities, and material(s) captured by emission control device • Any entrance or exit point of an enclosed storage area or building that houses chromium alloy melting operation(s)

Housekeeping Requirements (e) – Routine Cleaning (continued)

- Effective July 1, 2021, conduct cleaning using an approved cleaning method

Quarterly Subparagraph (e)(1)(G)	**Semi-Annual** Subparagraph (e)(1)(H)	**Annually** Subparagraph (e)(1)(I)	**Every Two Years (Summertime)** Subparagraph (e)(1)(J)	**Immediately** Subparagraph (e)(1)(K)
Inspect and clean for blockage by accumulated dust: • Vents, openings, and ducting of each chromium alloy melting operation emission control device	All floor areas: • Outside of the building subject to foot or vehicle traffic that is moving any metal or metal-containing materials	Entire facility, including any area not specified in cleaning provisions, where fugitive metal dust may deposit	All roof areas of the building housing chromium alloy melting operation(s)	Any construction or maintenance and repair activity or event

Housekeeping Requirements (e) – Prohibitions and Alternative Measures

- Paragraph (e)(2) – Prohibition of dry sweeping or compressed air cleaning
  - In areas where chromium alloy melting operation(s) occur
- Paragraph (e)(3) – Prohibition of weather caps that restrict the flow of exhaust air for vertical stacks

Revised Concept

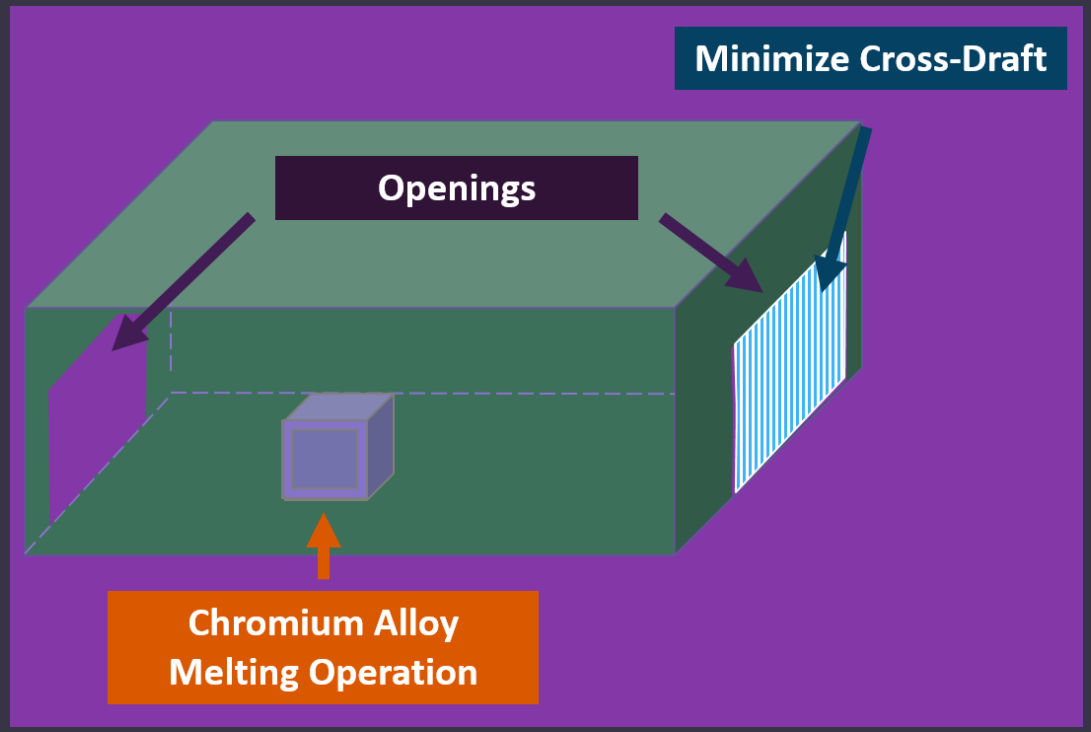
- Paragraph (e)(4) – Option to use an approved alternative housekeeping measure in lieu of an approved cleaning method
  - For housekeeping requirements in subparagraphs (e)(1)(E) to (e)(1)(K)
  - Needs to meet the same air quality objective and effectiveness of the housekeeping requirement it is replacing

Building Requirements (f) – Key Definitions

- Paragraph (c)(5) – Building
  - A type of enclosure that is a structure, enclosed with a floor, walls, and a roof to prevent exposure to the elements, with limited openings to allow access for people, vehicles, equipment, or parts
- Paragraph (c)(32) – Opening
  - Any opening designed to be part of a building, such as passages, doorways, bay doors, wall openings, roof openings, vents, and windows
  - Stacks, ducts, and openings to accommodate stacks and ducts are not considered openings

Building Requirements (f) - Key Provisions

- Paragraph (f)(1) – No later than July 1, 2021, conduct all chromium alloy melting operation(s) in a building
- Paragraph (f)(2) – No later than January 1, 2022, if the building has openings that are on opposite ends of the building, close at least one end, using one or more of the following:
  - Automated doors
  - Overlapping plastic strip curtains
  - Vestibules
  - Airlock system
  - Barrier (e.g. large piece of equipment) that is not a chromium alloy melting operation
  - Alternative methods approved by Executive Officer
- Paragraph (f)(3) – Close all roof openings directly above any metal melting operation, except during passage of equipment or parts



Building Requirements (f) – Building Compliance Plan

- Paragraph (f)(4) – If building requirements conflict with worker safety regulations
  - Submit a Building Compliance Plan to Executive Officer for approval no later than July 1, 2021
- Paragraph (f)(5) – If become aware of conflict with worker safety regulations after implementing building requirements
  - Notify the Executive Officer within 30 days
  - Submit a Building Compliance Plan for approval within 90 days
- Paragraphs (f)(6) & (f)(7) – Process of approval and appeal of Building Compliance Plans
- Paragraph (f)(8) – Once Building Compliance Plan is approved by the Executive Officer
  - Must implement within 90 days

Source Testing Requirements (g) – Key Provisions

- Conduct source tests to determine compliance with:
  - Aggregate hexavalent chromium emission limits for all chromium alloy melting furnaces and associated emission control device(s)
  - Minimum capture efficiency or velocity of the emission collection system
- Paragraph (g)(1) – Submit Source Test Protocol prior to conducting Source Test
- Paragraph (g)(2) – Source Tests
  - Initial Source Test
  - Periodic Source Testing

Source Testing Requirements (g) – Source Test Protocol

Paragraph (g)(1) – Source Test Protocol shall include:				
Source test criteria, all assumptions, and required data •Test methods •Flow rates	Planned sampling parameters •Production rate •Process materials •Total sample volume for each sample	Calculated target hexavalent chromium mass emission standard	Evaluation of the capture efficiency and velocity of the emission collection system	Information on equipment, logistics, personnel, and other resources necessary to conduct source test

Source Testing Requirements (g) – Schedule

Paragraph (g)(1) - Source Test Protocol
- Submit 90 days prior to source test due date

Paragraph (g)(3) - Source Test Notification
- Notify Executive Officer 1 week prior to source testing
- Notify change to source test date 24 hours prior to cancelling or rescheduling

Paragraph (g)(2) - Source Test
- Initial Source Test*: July 1, 2022
- Periodic Source Test: Every 48 Months
- Exploring extension of periodic source test frequency if successfully conduct all parameter monitoring requirements

Paragraph (g)(4) – Emission Limit Exceedance Notification
- Initial notification to 1-800-CUT-SMOG within 5 days
- Written notification within 10 day of initial notification

Paragraph (g)(9) – Source Test Report
- Submit within 90 days of source test completion

*For new or modified furnaces and control devices, within 180 days after Permit to Operate granted

Source Testing Requirements (g) – Test Methods

- Paragraph (g)(5) – Source Test Method
  - Source tests conducted representative of typical operating conditions at facility
  - In accordance with CARB Method 425: *Determination of Total Chromium and Hexavalent Chromium Emissions from Stationary Sources*
- Paragraph (g)(6) – Alternative Source Test Method
  - May use alternative or equivalent source test methods if approved in writing
- Paragraph (g)(7) – Use test laboratories approved under South Coast AQMD Laboratory Approval Program for test methods cited
  - Alternative testing procedures may be used upon approval
- Paragraph (g)(8) – When more than one source test method specified:
  - Source test method selected is subject to approval
  - Violation of the specified source test method(s) will constitute a violation of the rule

Source Testing Requirements (g) – Existing Source Tests

- Paragraph (g)(9) – Existing source tests conducted within 36 months from rule adoption
  - May be used as the initial source test specified if the source test meets the following criteria:
    - Is the most recent source test
    - Demonstrated compliance with the emission limit
    - Demonstrated compliance with minimum capture efficiency and velocity for emission collection system
    - Conducted using applicable and approved test methods and laboratories
    - Source test report was evaluated and approved by the Executive Officer

Material Testing Requirements (h)

- Conduct material testing to ensure alloys with arsenic and cadmium meet content limits
  - Only for materials that do not have documentation
- Paragraph (h)(1) - Use the most applicable test method for the sample matrix and as approved by the Executive Officer
  - U.S. EPA-approved methods
  - Active ASTM International methods
  - Metallurgical assay(s) for raw materials
  - South Coast AQMD-approved alternative methods
- Paragraph (h)(2) – Determine the weighted percentage of arsenic and cadmium contained in all materials melted in non-ferrous melting furnaces
  - Excludes rerun scrap and outside material with documentation confirming <0.002% arsenic and <0.004% cadmium
  - May use documentation, such as certificates of analysis of material specification sheets, in lieu of material testing

Parameter Monitoring Requirements (i) – Baghouse

Paragraph (i)(1) – Bag Leak Detection System

Identifies potential breach or blockage with bag

- Effective January 1, 2022
- Bag leak detection system to measure relative particulate matter emissions and activate alarm when change in particle mass loading is detected
- For all baghouses, regardless of size, bag leak detection system to be operated, calibrated, and maintained in accordance with Rule 1155 – Particulate Matter Control Devices Tier 3 requirements

Parameter Monitoring Requirements (i) – Filter Media

Paragraph (i)(2) – Pressure Across the Filter Media

Identifies potential breach or blockage with filter media

- Effective January 1, 2022
- Use a pressure gauge to continuously monitor pressure drop across each filter stage of the emission control device
- Maintain pressure drop within range specified by manufacturer or according to conditions of Permit to Operate for emission control device
- Position gauge so that it is easily visible and in clear sight
- Gauge should be:
  - Calibrated at least once every calendar year and maintained in accordance with manufacturer's specifications
  - Equipped with a continuous data acquisition system (DAS) that records pressure data output at least once every 60 minutes and generates file of data output each calendar day

Parameter Monitoring Requirements (i) – Emission Collection System Operation

Paragraph (i)(3) – Emission Collection System

Proper operation and collection of emissions

- Effective January 1, 2022
- Operate the emission collection system at a minimum capture velocity according to:
  - Conditions of the Permit to Operate for the emission control device
  - Specified in the most current edition of the *Industrial Ventilation: A Manual Recommended Practice for Design*, published by the American Conference of Governmental Industrial Hygienists (ACGIH) at the time the permit application is approved by the South Coast AQMD

Parameter Monitoring Requirements – Air Flow

Paragraph (i)(4) – Smoke Test

Ensures air from source is moving towards control device

- Effective January 1, 2022
- Conduct and pass smoke test during source testing, and every 180 days thereafter
  - Use procedure in Attachment A – Smoke Test to Demonstrate Capture Efficiency for Emission Collection Systems of an Emission Control Device
- Do not need to perform smoke test if:
  - Smoke test can be demonstrated to create an unreasonable risk
    - Must notify the Executive Officer of unreasonable risk

Parameter Monitoring Requirements (i) – Collection Efficiency

Paragraph (i)(5) – Verify Collection Efficiency

Ensures that capture velocity is maintained

- Effective January 1, 2022
- Use and keep onsite calibrated anemometer to measure the face velocity for each intake of the emission collection system
- Maintain minimum velocity as prescribed by:
  - Default value for specific emission collection design
  - Permit for emission control device
- Measure and record velocity once every six months

Parameter Monitoring Requirements (i) – Protocol for Reporting and Correcting Failed Measurements

- Paragraph (i)(6) – Report within 24 hours to 1-800-CUT-SMOG:
  - Cumulative hours of BLDS alarm activation exceeds 5% of total operating hours
  - Average pressure across a filter stage is not maintained within specified range
  - DAS fails to record or generate data from gauge
  - Failed smoke test
  - Anemometer reading shows required velocity is not maintained
- Paragraph (i)(7) – Within 24 hours of discovering parameter failure with emission collection or control device, stop operating associated furnace if fail to:
  - Minimize BLDS alarm activation
  - Maintain average pressure within specified range
  - Record or generate data from the gauge using a DAS
  - Conduct and pass smoke test
  - Maintain required velocity

Parameter Monitoring Requirements (i) – DAS Failure and Missing Data

- Paragraph (i)(8) – If DAS fails due to an emergency situation beyond facility's control (e.g. power outage, computer malfunction):
  - Restore DAS to working condition no later than 24 hours after end of emergency situation
  - Manually record the data output from the gauge at least once an hour until DAS is restored
- Period of missing DAS data due to the emergency situation will not be subject to compliance determination for failed parameter monitoring provisions

Recordkeeping Requirements (j)

- Assists in verifying compliance with rule provisions

Keep and maintain records of the following for five years

Revised Concept

- Paragraph (j)(1) – Quarterly quantities of raw materials processed, including purchase records
- Paragraph (j)(2) – Material testing data
- Paragraph (j)(3) – Source test data
- Paragraph (j)(4) – Housekeeping activities conducted
- Paragraph (j)(5) – Maintenance, repair and construction activities conducted on any equipment or structures associated with the chromium alloy melting operation(s)
- Paragraph (j)(6) – Inspection, calibration documentation, and maintenance of emission control devices
- Paragraphs (j)(7) to (j)(9) – Parameter monitoring data

Keep on-site and make available to South Coast AQMD upon request

Exemptions (k)

- PR 1407.1 contains exemptions for the following:
  - Paragraph (k)(1) – Facilities that melt less than 1 ton of chromium alloy(s) per year
    - Exemption from all rule requirements except recordkeeping to demonstrate quantity processed
  - Paragraph (k)(2) – Educational facilities (i.e. universities, colleges, schools) and jewelers are exempt from all rule requirements
    - Minor sources of chromium alloy melting

Revised Concept

  - Paragraph (k)(3) – Equipment subject to Rules 1420.1 and 1420.2 are exempt from all rule requirements
    - Rules 1420.1 and 1420.2 have more stringent requirements
    - Lead facilities with separate chromium alloy melting equipment would be subject to both Rule 1420.1/1420.2 and PR 1407.1 requirements
  - Paragraph (k)(4) – Brazing, dip soldering, metal cutting, and metal grinding performed for maintenance and repair activities on equipment and structures not associated with chromium alloy melting operations, are exempt from all rule requirements

Next Steps

Opportunities remain to revise preliminary rule language as rule development process progresses

- Requesting stakeholder input and further information

Public Workshop	September 24, 2020
Stationary Source Committee	October 16, 2020
Set Hearing	November 6, 2020
Public Hearing	December 4, 2020

Proposed Rule 1407.1 Staff Contacts

Rule Development

Charlene Nguyen
cnguyen@aqmd.gov
(909) 396-2648

Uyen-Uyen Vo
uvo@aqmd.gov
(909) 396-2238

Michael Morris
mmorris@aqmd.gov
(909) 396-3282

General Questions

Susan Nakamura
snakamura@aqmd.gov
(909) 396-3105

For more information:

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