7th Working Group Meeting for

Proposed Amended Rule 1469 – Hexavalent Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations

South Coast AQMD

October 26, 2017

Working Group Meeting

- Technical Working Group – objective is to discuss specific provisions for Proposed Amended Rule 1469 (PAR 1469)
- Much more technical and detailed than a Town Hall Meeting or a Public Workshop
- This is the 7th Working Group Meeting for PAR 1469
  - Extensive discussions regarding each aspect of PAR 1469
  - Two public drafts of PAR 1469
  - Preliminary Draft Staff Report out for public review
- Seeking comments on proposed provisions – important to keep the process moving forward
- Working towards a January 2018 Public Hearing for PAR 1469

Proposed Amended Rule 1469 (PAR 1469) Background

- PAR 1469 is designed to reduce hexavalent chromium emissions from facilities that conduct chromium electroplating and chromic acid anodizing operations
- PAR 1469 establishes additional requirements for hexavalent chromium tanks that are associated with chromium electroplating and chromic acid anodizing operations that were previously not known
- PAR 1469 provides additional requirements for point and fugitive sources of hexavalent chromium and establishes additional monitoring and testing requirements to better ensure continuous compliance

European Union (EU) Regulation on Hexavalent Chromium

- On April 17, 2013, the EU's chemical safety regulatory authority—the European Chemicals Agency (ECHA) - placed several of the most common forms of hexavalent chromium on its "Authorisation List"
- Chemicals placed on the Authorisation List are prohibited from use in, and importation into, the EU, unless companies that produce them or use them submit applications to exempt them for specific uses.
  - If an application is approved by ECHA, the chemical will continue to be permitted for those uses
- Staff is continuing to research ECHA's regulation and if there are similar provisions that can be implemented in PAR 1469 to minimize use of hexavalent chromium

Key Issues from Most Recent Comment Letter from the Metal Finishing Association

- The Metal Finishers Associations of California submitted a letter on October 12, 2017 to the SCAQMD addressing information presented at Working Group Meeting #6
- New Source Review – concerned that implementation of PAR 1469 requirements such as controls, housekeeping, and best management practices would trigger Rule 1303 and 1401 requirements
  - Associated permitting fees, meeting best available control technologies for toxics, and potential preparation of health risk assessments
- Chrome Tank Test Data – concerned that major rulemaking and policy decisions are being based on inconsistent data and little scientific support
  - If technology-based rule, SCAQMD should quantify emissions from various tank conditions and then determine what may pose an air quality problem and the required control
- Commented on need for add-on control devices for currently unregulated tanks, as their emissions are low and are not being exhausted from building enclosures

Key Issues from Metal Finishing Association Comment Letter *(continued)*

- Concerns that will be addressed by staff later in the presentation:
  - Classification of Tier I and Tier II tanks
  - Freeboard height requirements
  - Building enclosure requirements
  - Source testing frequency
  - Surface tension testing frequency

SCAQMD Testing of Hexavalent Chromium-Containing Tanks

SCAQMD Source Testing of Unregulated Hexavalent Chromium-Containing Tanks

- SCAQMD conducted source testing to determine conditions for bath concentrations and temperature that lead to hexavalent chromium emissions
- Objectives of the testing
  - Quantify hexavalent chromium emissions from heated hexavalent chromium-containing tanks such as sodium dichromate seal and passivation tanks
  - Identify correlation between hexavalent chromium emissions and varied tank bath temperatures and/or hexavalent chromium concentrations
- Emissions also evaluated on a per square foot basis to account for varied tank sizes
- 3 facilities provided assistance by allowing SCAQMD staff to use their tanks to conduct testing

Testing Scenarios and Preliminary Results

Table 1 – Fixed Concentration : Varied Temperature

Tank Type	Fixed % Concentration*	Varied Temperature	Cr+6 Emissions (mg/hr)
Sodium Dichromate Seal	1% – 2%	**202° F**	**77.5**
Sodium Dichromate Seal	1% – 2%	**140° F**	**0.0024**

Table 2 – Fixed Temperature : Varied Concentration

Tank Type	Fixed Temperature	Varied % Concentration*	Cr+6 Emissions (mg/hr)
Dilute Sodium Dichromate Seal	190° F	**0.006%**	**0.19**
Dilute Sodium Dichromate Seal	190° F	**0.065%**	**6.92**

- Each of the testing scenarios conducted at a different facility
- Same tank used for testing at a given facility
- Table 1 – Sharp decrease in emissions going from 202°F to 140°F at fixed concentration
  - Additional visual observation of steam emissions at 202°F yielding a yellow, orange colored condensate; no colored condensate at 140°F
- Table 2 – Relatively lower emissions at high temperature and varied low concentrations

*1% = 10,000 ppm

Testing Scenarios and Preliminary Results (continued)

Additional Tests for Temperature

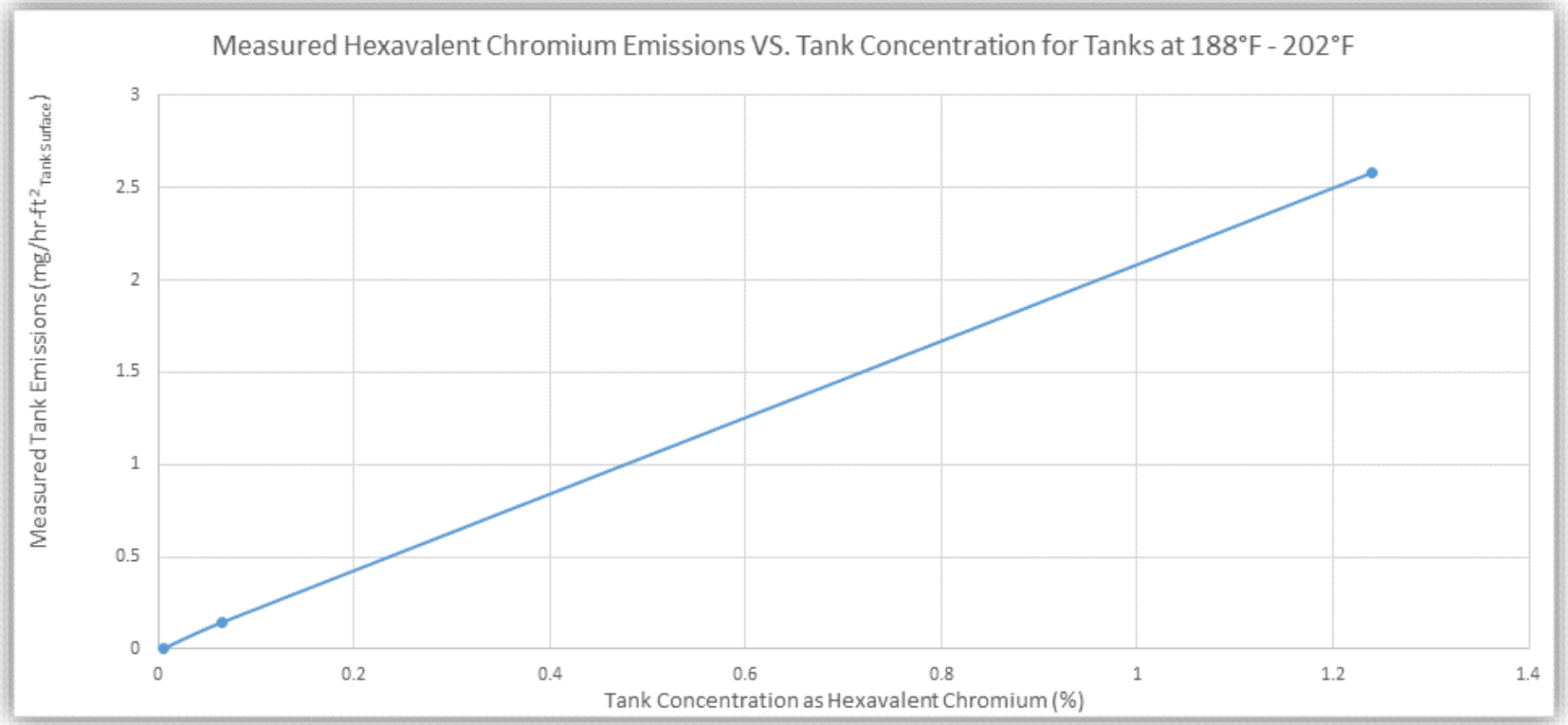
Tank Type	% Concentration*	Temperature	Cr+6 Emissions (mg/hr)
Passivation	1.6%	125° F	below detection limit
Sodium Dichromate Seal	1.5%	169° F	54.4

- Testing of each tank conducted at different facilities
- 125°F shows no detectable emissions at 1.6%
  - Consistent with Table 1 results for 140°F
- 169°F shows high emissions at approximately same concentration (1.5%)

*1% = 10,000 ppm

Testing Scenarios and Preliminary Results (continued)

- Results also show linear correlation between hexavalent chromium emissions and hexavalent chromium tank concentrations with similar tank temperatures



PAR 1469 Tier II Tanks and Testing Results

- Minimum temperature of 140°F* selected as a temperature threshold as significantly lower emissions observed below this temperature
- PAR 1469 still evaluating what the appropriate minimum tank concentration would be for the definition of a Tier II Tank
  - Tank concentration of 1% and above at 169°F show hexavalent chromium emissions of 54.4 mg/hr
  - Tank concentration of 0.065% shows hexavalent chromium emissions of 6.92 mg/hr
- Soliciting input from stakeholders to determine what tanks operate in this temperature range

*subject to change

PAR 1469 Pollution Controls for Chrome Emitting Tanks

Electroplating and Chromic Acid Anodizing Tanks

- Existing Emission Limits Based on Amp-Hours and Distance to Sensitive Receptors

Tier I Tanks
1,000 ppm of Cr+6

- Housekeeping and Best Management Practices

Tier II Tanks*
(TBD) ppm of Cr+6 that is air sparged, electrolytic, or heated > 140° F**

- Tier I Requirements and Add-on Controls with Emission Limits

* For Pollution Control Requirements, Excludes Electroplating and Chromic Acid Anodizing Tanks

** Subject to change

Key Revisions to PAR 1469 Rule Language

Thresholds for Tier I and Tier II Tanks – Definitions (c)

- A Tier I hexavalent chromium-containing tank means a tank permitted as containing a hexavalent chromium concentration of 1,000 parts per million (ppm) (0.1%) or greater
- A Tier II hexavalent chromium-containing tank means a Tier I hexavalent chromium-containing tank that meets any one of the following:
  - Has an operating temperature above 140°F*; or
  - Uses air sparging as an agitation method; or
  - Is electrolytic

*subject to change

Requirements for Freeboard Height (d)(4)

- Any Tier I or Tier II tank existing before rule adoption that undergoes specific modifications are required to maintain a freeboard height of at least 8 inches
- The modifications are:
  - A dimensional change to the tank; or
  - An increase to the permitted ampere-hour limit; or
  - An increase to the permitted concentration limit of hexavalent chromium; or
  - A tank temperature increase above 140°F*
- Changing the agitation from air sparging to another agitation method or adding a tank cover are not considered modifications that trigger the 8 inch freeboard requirement

*subject to change

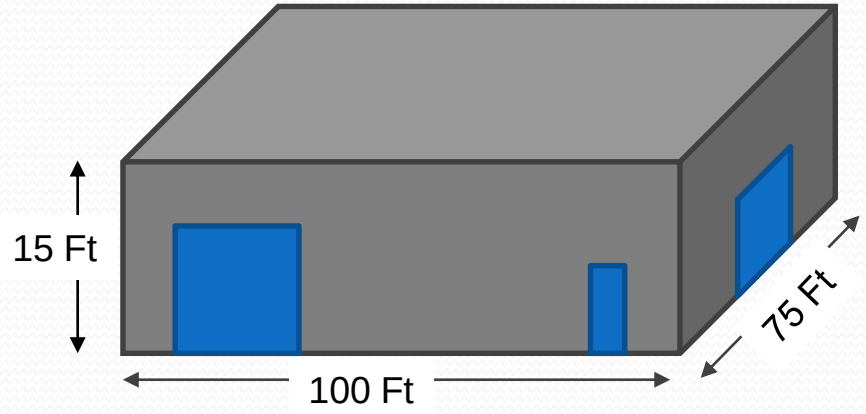
Requirements for Building Enclosures (e)

- Building Enclosures for Tier I and Tier II tanks shall meet the following requirements
  - The area of all openings in a building enclosure shall not exceed 3% of the building enclosure envelope
    - The envelope is calculated as the total surface of the building enclosure's exterior walls, floor and horizontal projection of the roof on the ground
    - The requirement is generally based on EPA's Method 204 for Permanent Total Enclosures which provides a 5% allowance for openings
    - The 5% allowance for openings in Method 204 is reduced to 3% for building enclosures in PAR 1469, since PAR 1469 does not require building enclosures to be under negative air
  - Information on calculations for the envelope are required to be provided in the compliance status reports pursuant to (p)(2) and (p)(3)

Calculation of Building Envelope

Walls = (2 × Length × Height) + (2 × Width × Height)
= (2 × 75 ft × 15 ft) + (2 × 100 ft × 15 ft)
= 5,250 sq ft

Floor and Roof = 2 × Length × Width
= 2 × 100 × 75
= 15,000 sq ft



Building Envelope = Walls + Floor + Roof
= 5,250 + 15,000 sqft
= 20,250 sq ft

Allowed openings is 3% of Building Envelope = 608 sq ft

Requirements for Building Enclosures (e) *(continued)*

- Ensure that any building enclosure opening that is on opposite ends of the building enclosure where air movement can pass through are not simultaneously open except during the passage of vehicles, equipment or people by closing or using one or more of the following methods:
  - Automated roll-up door;
  - Overlapping plastic strip curtain;
  - Vestibule;
  - Airlock system; or
  - Alternative methods approved by the Executive Officer

Requirements for Building Enclosures (e) *(continued)*

- Building Enclosures shall not be designed to conflict with Cal-OSHA/federal OSHA requirements for worker safety.
- If SCAQMD requirements conflict with OSHA requirements, the owner or operator shall contact SCAQMD in writing within 30 days of rule adoption:
  - Explanation of why building enclosure requirements in PAR 1469 conflict with federal or state OSHA requirements; and
  - Alternative compliance measures that facility would implement to minimize fugitive emissions
- Within 60 days of receiving the request, SCAQMD will notify the facility if the alternative compliance measures are approved.
  - The facility will have 90 days upon receiving approval to implement the alternative compliance measures

Source Testing Requirements and Test Methods (k)

- Upon successful completion of the initial source test for Tier II add-on air pollution controls, subsequent source tests must be conducted every 36 months thereafter
- In lieu of conducting a source test for subsequent tests, facilities may conduct an emission screening of hexavalent chromium as long as it:
  - Follows a source test protocol previously submitted and approved by SCAQMD;
  - Consists of one run to evaluate the capture and control of hexavalent chromium emissions; and
  - Is representative of operating conditions at the facility
- Emission screenings, together with periodic parameter monitoring, will demonstrate whether the air pollution control technique is operating and performing as intended, while reducing costs for owners or operators

Source Testing Requirements and Test Methods (k) *(continued)*

- The owner or operator will be required to conduct a complete source test using an approved method within 60 days of conducting an emission screening that:
  - Fails the capture efficiency test(s) specified in the source test protocol; or
  - Exceeds an emission limit specified in the Permit to Operate; or
  - Exceeds an emission standard of the rule.
- Staggered the submittal dates for test protocols for initial source tests based on facility permitted annual ampere-hours
  - Facilitates timely SCAQMD review of the protocols

Facility Surveys and Key Impacts

- SCAQMD staff has received 61 completed facility surveys
- Accurate and complete surveys will be used to estimate:
  - Capital and operating costs to facilities to comply with PAR 1469
  - Environmental impacts caused by implementation of PAR 1469

Next Steps

- Public Workshop - November 1, 2017 at SCAQMD Headquarters
  - Comments on the preliminary draft rule and preliminary draft staff report can be submitted during a two-week period after the public workshop ending November 15, 2017
- Set Hearing – December 1, 2017
  - Draft rule language and draft staff report will be available 30 days before Governing Board Meeting
- Governing Board Meeting – January 5, 2018

Contacts:
Eugene Kang (ekang@aqmd.gov)
Neil Fujiwara (nfujiwara@aqmd.gov)