10th Working Group Meeting for

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

South Coast AQMD
February 6, 2018
Update on PAR 1469 Schedule

- Preliminary Draft Rule and Staff Report (3rd revision) released January 19, 2018
- 3rd Public Workshop – February 8, 2018
  - Public comment period closes February 22, 2018
- Stationary Source Committee – February 16, 2018
- Set Hearing Date – March 2, 2018
- Public Hearing – April 6, 2018
Chemical Fume Suppressants
Chemical Fume Suppressants

- 2012 Chrome Plating NESHAP banned chemical fume suppressants containing PFOS
- 73 facilities utilize chemical fume suppressants
- Rule 1469 requires chemical fume suppressants to be certified
  - CARB and SCAQMD have certified 4 non-PFOS fume suppressants
  - Currently in use at some facilities
- OEHHA conducted toxicity reviews of non-PFOS fume suppressants
  - Limited health data on non-PFOS fume suppressants
  - No cancer potency values developed
  - Interim RELs (iREL) developed for one fume suppressant
  - Exposure data unknown
Toxicity Concerns of non-PFOS Fume Suppressants

- Environmental and community groups have recently examined OEHHA toxicity reviews
  - Asking that PAR 1469 phase-out use of non-PFOS chemical fume suppressants
- Scope of PAR 1469 has been broadened to include a revised certification process for chemical fume suppressants
- Beginning July 1, 2022, facilities may only use chemical fume suppressants certified through an revised process to be conducted by SCAQMD and CARB
Revised Certification Process

- Revised certification process may consider factors such as:
  - Toxicity reviews of chemicals contained in chemical fume suppressants
  - Emission rates of chemical fume suppressant
  - Additional hexavalent chromium emissions testing
- Additional emissions testing necessary to determine exposure potential
  - Testing method will need to be developed and conducted prior to July 2020
  - Testing may be conducted at tanks with add-on control
Certification of Wetting Agent Chemical Fume Suppressants (I)

- Certification process will be conducted by SCAQMD and CARB
- By July 1, 2020, the Executive Officer shall notify the owner or operator the following information:
  - The availability of a certified chemical fume suppressants by July 1, 2022
  - The certification status of any potential wetting agent chemical fume suppressant
- Beginning July 1, 2022, the owner or operator shall only add a wetting agent chemical fume suppressant to a Tier II Tank that meets the requirements of (I)(1)
Requirements if Rule-Compliant Chemical Fume Suppressants Cannot be Certified

- If rule-compliant chemical fume suppressant(s) will not be available by July 1, 2022, facilities using them must:
  - Meet rule emission limits via air pollution control techniques by July 1, 2022; or
  - Submit to SCAQMD by January 1, 2021 a written and signed commitment to phase-out hexavalent chromium in the subject tank by July 1, 2023
- Owner or operator that fails to phase out hexavalent chromium by July 1, 2023, will be required to cease operation of electroplating or chromic acid anodizing tank
- Staff is looking into potential sources of funding to incentivize:
  - Acceleration of schedule to install add-on controls
  - Phase-out of hexavalent chromium from plating/anodizing tanks
Building Enclosures: Rule Input from CAL-OSHA
Background

- Industry expressed concerns regarding impacts of building enclosure requirements:
  - Limiting openings to <3% of building envelope
  - Openings on opposite ends of a building
  - Openings facing nearby sensitive receptors
  - Limiting roof openings located near Tier II tanks
  - Prohibition of forced-air roof openings unless vented to HEPA

- Industry concerns
  - Adequate ventilation through building
    - 6 air changes/hour (ACH)
  - Removal of heat from building for worker safety and comfort
  - Costs of compliance if facilities need to install building ventilation
Rule Input from Cal-OSHA

- SCAQMD staff contacted Cal-OSHA on January 12, 2018
- CAL-OSHA does not specify a minimum ventilation rate for plating facilities
- CAL-OSHA plans to develop an indoor heat rule
  - Potentially similar requirements to outdoor heat rule \((CCR \ Title \ 8 \ §3395 \ Heat \ Illness \ Prevention)\)
    - Provision of water
    - High-heat procedures
    - Acclimatization
    - Training
    - Heat illness prevention plan
- After initial review of PAR 1469 proposal, CAL-OSHA staff did not find any conflicts between CAL-OSHA requirements and PAR 1469 requirements
- Paragraph (e)(8) allows for flexibility in compliance for situations where a PAR 1469 rule requirement conflicts with OSHA or CAL-OSHA requirements
Updates to Preliminary Draft Rule Language (released 1/19/18)
Definitions (c)

- Revised “Approved Cleaning” to include wet wash system based on feedback from stakeholders
- Revised “Tier II Hexavalent Chromium Containing Tanks” (Tier II Tank) to reflect recent results from emissions testing

<table>
<thead>
<tr>
<th>Tank Condition</th>
<th>Hexavalent Chromium Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature 140-150°F</td>
<td>1,500 PPM</td>
</tr>
<tr>
<td>Operating Temperature 150-160°F</td>
<td>500 PPM</td>
</tr>
<tr>
<td>Operating Temperature &gt; 160°F</td>
<td>100 PPM</td>
</tr>
<tr>
<td>Uses air sparging as an agitation method</td>
<td>1,000 PPM</td>
</tr>
<tr>
<td>Electrolytic</td>
<td>1,000 PPM</td>
</tr>
</tbody>
</table>
Building Enclosures (e) – Closing of Roof Openings

- Revised PAR 1469 to require all enclosure openings in the roof that are located within **15 feet** from the edge of any Tier II Tank be closed
  - Fugitive emissions from tanks have been observed at some facilities to escape roof openings that were located within 15 feet of the tank
- Staff is still concerned with roof openings that are directly above the tank regardless of distance
- Clarification
  - Exempt openings include those that provide intake air
  - Staff looking at additional rule language to acknowledge other stacks, such as those venting non-Rule 1469 tanks and how they relate to enclosure openings
Housekeeping Requirements (f) – Abatement of Suspect Hexavalent Chromium Prior to Installation, Modification, or Removal of Add-On Air Pollution Control Devices

- Added paragraph to specify housekeeping measures to be implemented during the installation, modification, or removal of Add-On Air Pollution Control Devices:
  - Surfaces shall be cleaned by vacuum
  - All construction and demolition shall be done in a temporary total enclosure that is vented to HEPA filtration
  - All waste materials shall be disposed as hazardous waste
  - 48 hours prior to commencement of work, contact the SCAQMD by calling 1-800-CUT-SMOG
Add-on Air Pollution Control Devices and Emission Standards (h) – Tier II Hexavalent Chromium-Containing Tanks

- Modified existing emission limits to be

<table>
<thead>
<tr>
<th>Exhaust Flow Rate</th>
<th>Controlled Tier II Tanks In a Permanent Total Enclosure?</th>
<th>Applicable Square Footage to Determine Emission Rate</th>
<th>Emission Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 5,000 CFM</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>0.20 mg/hr</td>
</tr>
<tr>
<td>&gt;5,000 CFM</td>
<td>No</td>
<td>Controlled Tier II tanks</td>
<td>0.004 mg/hr-ft²</td>
</tr>
<tr>
<td>&gt;5,000 CFM</td>
<td>Yes</td>
<td>Controlled Tier II tanks and tanks requiring controls by a SCAQMD Permit</td>
<td>0.004 mg/hr-ft²</td>
</tr>
</tbody>
</table>

- Emission rate calculated as mg/hr-ft² added to address larger ventilation systems
Facilities may conduct an emission screening test instead of the initial source test if the owner or operator conducted a source test after January 1, 2009

- Previous qualifying source test for this provision was October 24, 2009
Parameter Monitoring (m) Add-On Air Pollution Control Device

- Removed subparagraph (A) for Pressure Drop
  - Owners or operators are required to monitor pressure and pressure drops for the Pressure and Air Flow subparagraph
  - Requirement was redundant to Pressure and Air Flow subparagraph

- Removed subparagraph (D) that prohibited any air velocity within 10 feet of a Tier II Tank vented to an add-on air pollution control device
  - Potentially conflicted with air flows generated by other air pollution control devices
Proposed Requirements Under Further Evaluation by Staff

- Prohibition of the operation of any device on the roof of any building enclosure that pulls air from enclosure to the outdoor air
- Specific conditions for “wet” buffing, grinding, and polishing
- Modify compliance dates for Tier II tank permit application submittal
- Emission limits for facilities that control electrolytic and non-electrolytic Tier II tank by a shared add-on air pollution control device
Cost Estimates
Background

- Staff has been conferring with Environomics (MFASC consultant) regarding cost data
- Sources of information:
  - Compliance staff collected survey information at the facility
  - Facility provided additional information survey
  - Permit applications
  - Vendor quotes
- Four general cost categories associated with PAR 1469
  - Add-on Air Pollution Control Devices
  - Periodic Source Testing/Emission Screening
  - Building Enclosure Modification
  - Maintenance and Housekeeping
Facilities were categorized based on electrolytic operation and permitted ampere-hour to bin cost estimates

- Chromic Acid Anodizing, Hard Electroplating, Decorative Electroplating
- Small (0-500,000 Ampere-Hours), Medium (500,000-10,000,000 Ampere-Hours), Large (>10,000,000 Ampere-Hours)

Using survey data and existing data, staff estimated:

- The number of facilities that have Tier II Tank (non-anodizing or electroplating)
- The number of Tier II Tanks (non-anodizing or electroplating)
- The number of source test/emissions screening needed to be conducted
Add-on Air Pollution Control Devices - Construction

- Staff used a conservative estimate of $23 per cubic feet per minute (CFM) for ventilation
  - Cost included equipment, ductwork, installation, and set-up
  - Cost is based on updated 2006 CARB information and vendor quotes
  - $23 per CFM is similar to $/CFM cost assumed by Environomics
- Ventilation system size is based on 150 CFM per square foot of tank surface area to be controlled
Add-on Air Pollution Control Devices – Construction for Tier II Tanks

<table>
<thead>
<tr>
<th>Category*</th>
<th>Average Tank Size (ft²)</th>
<th>Average Number of Tier II Tank</th>
<th>Average Surface Area (ft²)</th>
<th>Size of System (CFM)</th>
<th>Number of Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anodizing Small</td>
<td>31.0</td>
<td>2.0</td>
<td>62.0</td>
<td>9,300</td>
<td>11</td>
</tr>
<tr>
<td>Anodizing Medium</td>
<td>24.4</td>
<td>3.5</td>
<td>85.4</td>
<td>12,810</td>
<td>15</td>
</tr>
<tr>
<td>Decorative Small</td>
<td>19.4</td>
<td>1.3</td>
<td>25.2</td>
<td>3,778</td>
<td>14</td>
</tr>
<tr>
<td>Decorative Medium</td>
<td>47</td>
<td>2</td>
<td>94</td>
<td>14,100</td>
<td>3</td>
</tr>
<tr>
<td>Hard Medium</td>
<td>2.5</td>
<td>1</td>
<td>2.5</td>
<td>375</td>
<td>3</td>
</tr>
<tr>
<td>Hard Large</td>
<td>22.5</td>
<td>1.8</td>
<td>40.5</td>
<td>6,075</td>
<td>9</td>
</tr>
</tbody>
</table>

* Small (0-500,000 Ampere-Hours), Medium (500,000-10,000,000 Ampere-Hours), Large (>10,000,000 Ampere-Hours)
Add-on Air Pollution Control Devices – Additional Operational Cost to Be Considered

- Staff is still evaluating the following costs:
  - Electricity cost
  - Cleaning of roof surfaces prior to the installation of add-on air pollution control devices
  - Maintenance of add-on air pollution control devices
  - Replacement filters
  - Permitting costs
Electroplating and Anodizing Tanks
- 64 Facilities are required to do emission screening test (source test conducted after January 1, 2009)
- 25 Facilities are required to do a full source test (source test conducted before January 1, 2009)

Non-Electroplating and Non-Anodizing Tier II Tanks
- 137 tanks are required to be fully source tested

Initial or Full Source Test Cost - $18,000
Emission Screening Test Cost - $14,000
Building Enclosure Modifications

- Staff is still evaluating cost for building enclosure modifications
  - Conducted 4 site visits to specifically look at existing building enclosure openings
  - 1 Hard Electroplating, 1 Decorative Electroplating, 1 Chromic Acid Anodizing/Hard Electroplating, 1 Chromic Acid Anodizing

Findings

- Limited roof openings within 15 feet of tanks considered Tier II Tanks
- Limited forced air ventilation systems
- Facility representatives indicated that temperatures were elevated compared to ambient temperature
Solutions for Building Enclosure Roof Openings

- Some skylights had “ridge vents” that would allow air to leave the building enclosure
  - Facilities closed the “ridge vents” with mastic or other material to eliminate openings
- Facilities also looking into constructing box frames to be permanently placed over existing openings
- Solutions observed and noted will be considered when determining compliance cost
- Staff will continue to work with Environomics to include other solutions
Additional Cost Under Evaluation

- **Building Enclosure Modification**
  - Existing building enclosures can be modified to comply with PAR 1469
  - Many facilities are currently in compliance with 3% building enclosure envelope and other provisions related to openings without using a Permanent Total Enclosure
  - Other costs that will be considered:
    - Plastic strip curtains
    - Other construction methods to reduce openings (e.g., patching, paneling, etc)

- **Housekeeping and Maintenance**
  - Staff is still evaluating costs
Next Steps

- Public Workshop – February 8, 2018
- Stationary Source Committee Meeting – February 16, 2018
- Close of Public Comments – February 22, 2018
- Set Hearing – March 2, 2018
- Governing Board Meeting – April 6, 2018

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