

# **3<sup>rd</sup> Working Group Meeting for**

**Proposed Amended Rule 1469 – Hexavalent Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations and  
Proposed Amended Rule 1426 – Emissions from Metal Finishing Operations**

**South Coast AQMD**

**June 29, 2017**

# Summary of Working Group #2 on May 18, 2017

- Responded to comments from Working Group #1:
- Discussion of Point Source Pollution Controls
  - Summary of point source pollution controls used by Rule 1469 facilities
  - Observations of conditions and performance of add-on controls
  - Possible areas to watch for potential issues regarding non-PFOS fume suppressants
  - Issues regarding emission collection systems for add-on controls and cross-draft conditions
  - Staff recommendations to address issues
    - Source test to confirm in-tank controls meet 0.01 mg/amp-hr emission limit
    - Encourage use of other mixing techniques that do not generate air emissions
    - Reduce cross-draft by closing openings, enclose tank areas, erect barriers around rectifiers, and direct comfort fans away from tanks
    - Additional maintenance and monitoring measures to ensure proper collection and control
    - Periodic source testing of air pollution controls

# Key Comments at Working Group #2

- Request to provide information on monitoring costs for hexavalent chromium
  - Staff committed to include ambient air monitoring, in addition to housekeeping at Working Group Meeting #3
- Provide information on general sources influencing background ambient hexavalent chromium concentrations
  - Based on MATES III and IV studies, localized increases in hex chrome can occur near facilities using hex chrome-containing materials
  - References metal platers, cement manufacturing plants, and other facilities that use chromium-containing parts
  - MATES IV utilized 10 monitors located in the South Coast Basin that weren't adjacent to chrome platers or anodizing facilities
  - Most monitoring facilities were not within 1,000 feet of facilities that could be sources of hexavalent chromium

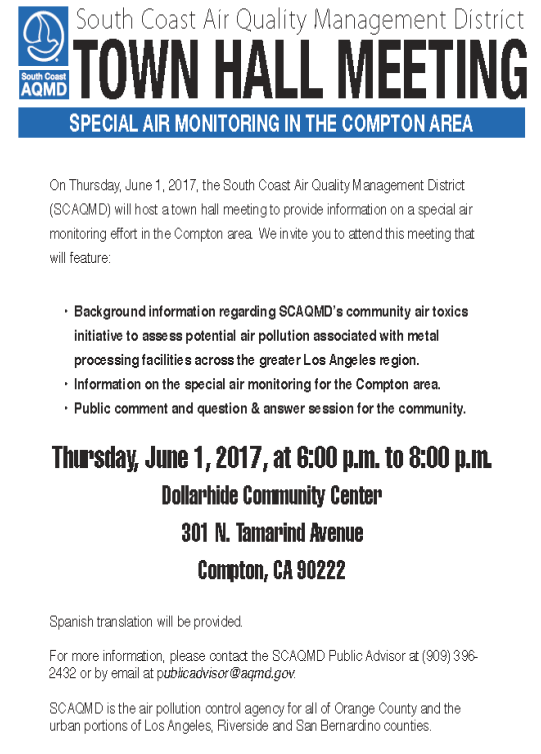
# Key Comments Received at Working

## Group #2 *(continued)*

- Industry representatives commented that they would prefer that operators complete the survey rather than SCAQMD inspectors and rule team
  - SCAQMD staff has been working with a representative from the MFASC and Environomics to incorporate additional questions for the socioeconomic analysis
  - SCAQMD staff is planning to send the survey to facility owners by both ground mail and email by the end June 2017
  - SCAQMD staff is requesting this voluntary information submittal by July 21, 2017
- MFASC also expressed concern about the air toxics initiative in Compton
  - Air toxics initiative is a separate program from rulemaking
  - Will incorporate information into PAR 1469, if appropriate

# SCAQMD Compton Town Hall Meeting Air Toxics Initiative

- Held in the City of Compton on June 1, 2017
- Provided information on special air monitoring effort in the Compton area:
  - Background on SCAQMD's community air toxics initiative
  - Special monitoring in Compton
  - Public comment and question & answer session for community
- Hexavalent chromium monitoring began on June 3, 2017
  - Monitoring results posted on SCAQMD website



The flyer features the SCAQMD logo on the left, which includes a stylized sun and the text 'South Coast AQMD'. To the right of the logo, the text reads 'South Coast Air Quality Management District' followed by 'TOWN HALL MEETING' in large, bold, black letters. Below this, a blue banner contains the text 'SPECIAL AIR MONITORING IN THE COMPTON AREA'. The main body of the flyer contains the following text: 'On Thursday, June 1, 2017, the South Coast Air Quality Management District (SCAQMD) will host a town hall meeting to provide information on a special air monitoring effort in the Compton area. We invite you to attend this meeting that will feature:' followed by a bulleted list of topics. Below the list, the date and time are given as 'Thursday, June 1, 2017, at 6:00 p.m. to 8:00 p.m.' and the location as 'Dollard Community Center, 301 N. Tamarind Avenue, Compton, CA 90222'. At the bottom, it states 'Spanish translation will be provided.' and provides contact information for the Public Advisor: '(909) 396-2432 or by email at public.advisor@aqmd.gov'. A final line of text at the bottom reads: 'SCAQMD is the air pollution control agency for all of Orange County and the urban portions of Los Angeles, Riverside and San Bernardino counties.'

South Coast Air Quality Management District  
**TOWN HALL MEETING**  
SPECIAL AIR MONITORING IN THE COMPTON AREA

On Thursday, June 1, 2017, the South Coast Air Quality Management District (SCAQMD) will host a town hall meeting to provide information on a special air monitoring effort in the Compton area. We invite you to attend this meeting that will feature:

- Background information regarding SCAQMD's community air toxics initiative to assess potential air pollution associated with metal processing facilities across the greater Los Angeles region.
- Information on the special air monitoring for the Compton area.
- Public comment and question & answer session for the community.

**Thursday, June 1, 2017, at 6:00 p.m. to 8:00 p.m.**  
**Dollard Community Center**  
**301 N. Tamarind Avenue**  
**Compton, CA 90222**

Spanish translation will be provided.

For more information, please contact the SCAQMD Public Advisor at (909) 396-2432 or by email at [public.advisor@aqmd.gov](mailto:public.advisor@aqmd.gov).

SCAQMD is the air pollution control agency for all of Orange County and the urban portions of Los Angeles, Riverside and San Bernardino counties.

# Meetings with Metal Finishers Since Last Working Group Meeting

- Rules staff met with representatives from the Metal Finishing Association to discuss the economic analysis for PAR 1469 on May 23, 2017
- Staff discussed a report titled “Models, Methods, and Data for Estimating Small Scale and Small Business Impacts”
  - Report was prepared by IEC for the SCAQMD
  - Final report was released on May 16<sup>th</sup>
  - Report has recommendations on models and methods to estimate small business impacts
  - SCAQMD staff is working with the Metal Finishing Association regarding assessing economic impacts for PAR 1469/1426
  - Metal Finishing Association has provided input on the “survey” to gather financial information for socioeconomic analysis
- On June 13, 2017, Legal Counsel for MFASC met with SCAQMD Legal staff on a variety of issues (rules staff did not participate)



# Ambient Air Monitoring of Hexavalent Chromium

# Overview – Ambient Air Samplers

- Ambient air samplers
  - Measures ambient concentration of specific pollutants
  - Captures fugitive and point source emissions
  - Ambient air samplers are the primary quantitative tool to estimate fugitive emissions
  - Identifies concentration of specific pollutants in a given area
  - Assists in determining effectiveness of control measures implemented at a facility to reduce point source and fugitive emissions
- SCAQMD staff have utilized ambient air samplers to measure ambient levels of hexavalent chromium for:
  - Chrome plating facilities – Hixson, Anaplex, Lubeco
  - Cement manufacturing – Cal Portland
  - Air Toxics Initiative – Paramount and Compton

# Recent Findings Regarding Ambient Monitoring

- Ambient monitoring have identified new sources of hexavalent chromium that the SCAQMD was not previously aware of such as cement clinker, metal heat treating, and unregulated tanks at chromic acid anodizing facilities<sup>1</sup>
- For Aerocraft and Anaplex, observed a 5-fold drop-off in concentration over 500 feet in the downwind concentration
- Ambient monitoring has shown that contribution of fugitive emissions can be substantial – enclosures and housekeeping are effective at minimizing fugitive emissions<sup>2</sup>

<sup>1</sup> Based on ambient monitoring near Cal Portland Cement, Aerocraft Heat Treating, Hixson Metal Finishing, and Anaplex Corporation

<sup>2</sup> Aerocraft Heat Treating and Hixson Metal Finishing

# Hexavalent Chromium Air Samplers

- Ambient air samplers can be used to monitor multiple toxic metals such as nickel, lead, total chromium, etc.
- Must use a special filter when sampling for hexavalent chromium – because hexavalent chromium can convert to other forms of chromium
- Challenges of hexavalent chromium sampling
  - Low detection limit
  - Samples should be collected within 24 hours of sample end time
  - Collected samples should be kept at 4°C and should conduct analysis within 2 weeks
  - Analysis should be conducted within 24 hours of sample extraction from the filter

# Ambient Air Samplers Used by SCAQMD for Hexavalent Chromium

- Ambient air samplers are units generally consisting of a vacuum motor/pump, filter assembly, flow control device, timer, recorder, and housing
- Air is pulled into the sampler at a constant flow rate for a specified period of time with any particulates deposited onto a filter
- Various types of samplers can be used to measure ambient hexavalent chromium concentrations
- SCAQMD has used the following types depending on logistical factors (e.g., space, power needs)



BGI PQ100

BGI Omni

Xonteck 924

Type	Cost	Mount Option	Power Source
BGI OMNI	~\$4,800	<ul style="list-style-type: none"> <li>• Stands</li> <li>• Pole mount</li> </ul>	<ul style="list-style-type: none"> <li>• AC, DC and solar</li> <li>• Recharge unit if pole mounted</li> </ul>
BGI PQ100	~\$6,700	<ul style="list-style-type: none"> <li>• Stands</li> </ul>	<ul style="list-style-type: none"> <li>• AC, DC and solar</li> </ul>
Xonteck 924	~\$24,000	<ul style="list-style-type: none"> <li>• Stands</li> </ul>	<ul style="list-style-type: none"> <li>• AC, DC and solar</li> </ul>

# Sample Analysis

- Filters from air samplers are collected and analyzed to determine the mass of any hexavalent chromium deposited
- Concentrations in nanograms per cubic meter ( $\text{ng}/\text{m}^3$ ) are determined based on the flow rate measured during the collection of the sample
- SCAQMD uses cellulose acetate filters that are prepared by acid wash and sodium bicarbonate impregnation
- Filter cost (does not include filter preparation)
  - 37 mm size: ~ \$90 (500 filter pack)
  - 47 mm size: ~ \$40 (100 filter pack)
- Sample analysis for hexavalent chromium conducted using SCAQMD SOP0046 (*modified CARB Method MLD039*)
  - Third-party lab analysis cost per filter: \$75 per sample (minimum 2 samples)
    - Turnaround time is 2 weeks
    - Increased cost for faster turnaround (additional \$350-\$550 depending on the situation)
    - Includes quality check of samples



37 mm filter



47 mm filter

# General Approach to Ambient Monitoring

- Ambient samples are taken over a 24-hour period
- Sampling frequency can be daily, 1-in-3 days, or 1-in-6 days
- Monitors are generally placed where the maximum ground level concentration and an upwind location
- Number of monitors can vary – existing Rules 1420.1, 1420.2 (lead sources) and Rule 1156 (hexavalent chromium at cement plants) require a minimum of 3 monitors
- Laboratory analysis of sample filters

# Potential Concepts for Ambient Monitoring – On-Ramp

- Staff is considering an on-ramp for ambient monitoring for PAR 1469
- Potential triggers for “on-ramp”
  - Estimated cancer risk of > 100 in a million based on:
    - SCAQMD ambient monitoring
    - Approved health risk assessment
  - High amp-hour facilities possibly sensitive receptor component
  - High amp-hour facilities operating tanks without add-on air pollution control (only in-tank controls such as fume suppressants) possibly sensitive receptor component
  - Source test determining non-compliance with hexavalent chromium emission rate limit
  - Continuous operational issues with point source controls – such as operating outside monitored parameters specified in rule
  - Failed capture efficiency testing of point source controls
  - Other?

# Potential Concepts for a Hexavalent Chromium Ambient Concentration Limit

- Site-specific ambient concentration limit
  - Can be back-calculated from cancer risk
  - Account for nearest sensitive receptor
  - Allows a site specific threshold depending on receptor type and distance
- Universal ambient concentration limit
  - Can be back-calculated from cancer risk
  - May be too high or too low depending on receptor type and distance
- Considering no background subtraction – seeking input
  - May allow provision to provide information to substantiate contribution of other sources

# Potential Concepts for Key Requirements When Ambient Monitoring is Required

- Submit a Monitoring and Sampling Plan
  - Identifies location of equipment and processes to best site monitors
  - Air dispersion modeling required to identify maximum ground level concentration for monitor siting
- Weather station with data logger – measures wind speed and direction
- At a minimum 2 monitors: upwind and downwind monitor (possibly third)
- 24-hour sampling duration
- Considering averaging period – seeking input
  - Hixson was a 7-day rolling average
  - Anaplex and Aerocraft Order for Abatement is a consecutive 3-sample average
- Sampling schedule: 1-in-3 days – seeking input
  - Sampling schedule in Paramount and Compton for R1469 facilities is 1-in-3 days

# Potential Concepts if Ambient Concentration Limit is Exceeded

- If ambient concentration is exceeded must conduct a root cause analysis to determine potential source of exceedance
  - Require facility to address source of exceedance within specified timeframe
- If ambient concentration is persistently exceeded, PAR 1469 would include a menu of options that can include:
  - Enhanced or additional point source controls;
  - Enhanced housekeeping measures;
  - Upgrade to total enclosure – vestibules, negative air vented to pollution controls; or
  - Process modifications
- Considering curtailment provisions if persistently exceeded over “X” times the ambient concentration limit

# Potential Concepts for Ambient Monitoring – Off-ramp

- Demonstrate average results from ambient monitors are below specified ambient concentration for a specified duration of time
  - Ambient concentration can be facility specific, taking into consideration distance to sensitive receptors
  - Duration takes into consideration sufficient time to assess situation
  - Air dispersion modeling to substantiate anticipated ambient concentration is below specified ambient concentration

# Cost Considerations

- Ambient Air Monitoring Sampling Plan
  - Cost to prepare Plan ~\$8,500<sup>1</sup>
  - Cost SCAQMD review (20 to 50 hours) ~\$130 per hour (Rule 306)<sup>2</sup>
- Ambient sampler ~\$4,800-\$24,800
- Wind monitor<sup>3</sup> – capital and installation ~\$4,000
- Ongoing ambient air monitoring costs (see previous slides)
  - Filter preparation and replacement
  - Laboratory analysis (\$75-\$150 per sample)
  - Maintenance of sampler<sup>3</sup> (\$1920 per year)
  - Expedited turnaround time (added cost of \$350-\$550 per sample depending on situation)
- Sampling frequency will substantially affect ambient monitoring costs

<sup>1</sup> Based on cost estimate for preparing Lead Ambient Sampling Plans for Rule 1420.2.

<sup>2</sup> Based on estimated hours to review Ambient Air Monitoring Sampling Plans for Rule 1420.2. Hours varies based on complexity of Plan.

<sup>3</sup> Based on cost estimates for Rule 1420.2.



# Housekeeping and Best Management Practices to Minimize Fugitive Dust

# Overview

- Focus of the housekeeping portion of the presentation is on current Rule 1469 housekeeping requirements
  - Provide an overview of the housekeeping requirements
  - Identification of areas of concern with current implementation of current housekeeping requirements
  - Initial recommendations for proposed amendments

# Current Rule 1469 Housekeeping Requirements

- Rule 1469 currently requires facilities to comply with housekeeping requirements in subparagraph (c)(4):
- Housekeeping requirements include:
  - Storage and transport of material containing hexavalent chromium in a closed container
  - Clean up spills immediately or no longer than being spilled
  - Store and transport chromium contaminated waste generated from housekeeping activities using practices that do not lead to fugitive dust
  - Clean surfaces potentially contaminated with hexavalent chromium at least once every seven days

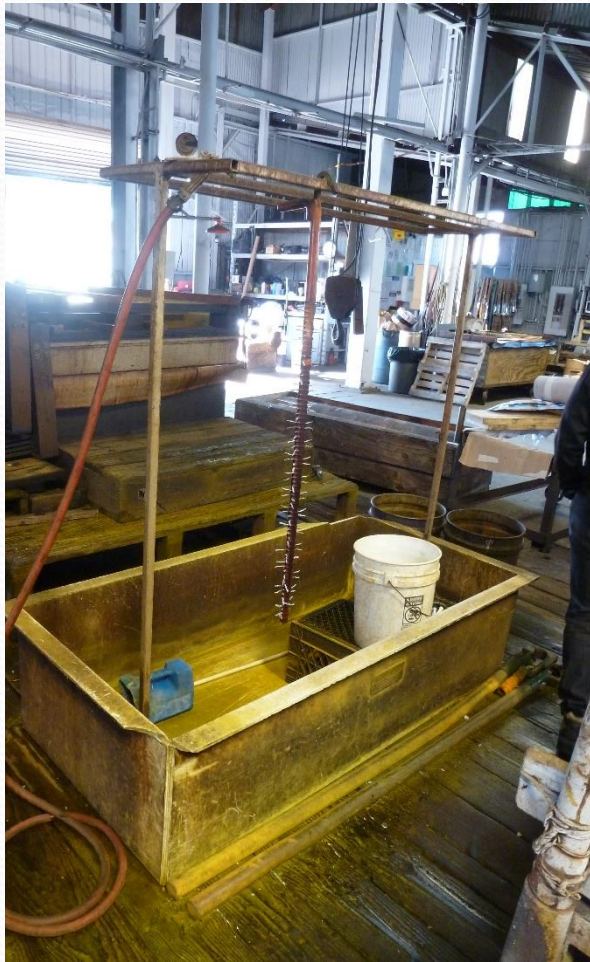
# Current Rule 1469 Housekeeping Requirements *(continued)*

- Housekeeping requirements include:
  - Prohibit compressed air cleaning adjacent to buffing areas, grinding areas or electroplating or anodizing operations
  - Installation of a physical barrier to separate the buffing, grinding, or polishing area from the electroplating or anodizing operation
  - Automated lines shall have drip trays installed between tanks so that liquid does not fall through the space between
  - Non-automated lines shall handle parts and equipment in a manner that chromic acid does not drip outside of the tank, spraying down parts over the tank shall use a splash guard to minimize overspray, and the splash guard shall be cleaned so that there is no accumulation of visible dust

# Observations of Housekeeping

- SCAQMD rule staff began conducting site visits for PAR 1469 in 2015
- Liquid with chromic acid, when dried can lead to fugitive emissions of hexavalent chromium
- The following are areas within a plating or anodizing operation that may lead to the generation of fugitive hexavalent chromium emissions
  - Spray rinsing of parts is not contained and emissions are becoming fugitive
  - Drag-out of chrome laden material occurs during parts transfer
  - Roof cleanings
  - Drying of plated/anodized parts
  - Waste processing areas have accumulation of material

# Rinsing of Parts – Staff Observations



## Rinsing Practices that can Contribute to Fugitive Emissions

- Spraying parts with a hose above a tank with the rinse water being uncontained
- Rinse guards that do not protect against cross-draft conditions
- Use of high pressure/high volume spray which may lead to fugitive emissions

## Rinsing Practices that can Minimize Fugitive Emissions

- Spraying parts with a hose within a tank where rinse water is collected
- Rinse guards fully enclosed the tank preventing spray from becoming fugitive
- Use of low-flow/low-pressure spray to minimize fugitive emissions
- Spraying parts in a downward method

# Initial Recommendations When Spray Rinsing of Parts

- Parts shall be sprayed in a tank, or spray guards shall be utilized around the tank where rinsing is taken place
- Spray guards shall be constructed in a manner to prevent rinse water or chrome laden material from being fugitive with a minimum of three walls
- Parts shall be sprayed using a low flow/low pressure nozzle with a flow rate of less than 2 gallon per minute – seeking input

# Drag-Out – Staff Observations

## Drag-Out Practices that can Contribute to Fugitive Emissions

- Parts are pulled up quickly and moved to the next operation leading to drag out of liquid
- Parts are transferred to tanks or areas not adjacent to the hexavalent chromium containing tank
- Drag-out is not caught/contained during the transfer process to the next tank
- Chrome laden fluid lands on the floor and can be tracked out via foot traffic

## Drag-Out Practices that can Minimize Fugitive Emissions

- Parts are pulled up slowly and reside over the tank for a period of time to allow liquid to return to the tank
- Facilities utilize drip trays to prevent chrome laden liquid from landing on the floor
- Facilities utilize a conveyor system or basket to transfer parts to prevent chrome laden liquid from landing on the floor



# Initial Recommendations for Drag-Out

- Liquids adhering to parts shall drip into process tank prior to transferring to next tank
- Parts shall be removed in a manner to minimize the adherence of chrome laden liquid to the part
- Facilities shall utilize methods that prevent chrome laden liquid from landing on the floor or other surfaces

# Roof Cleaning – Staff Observations

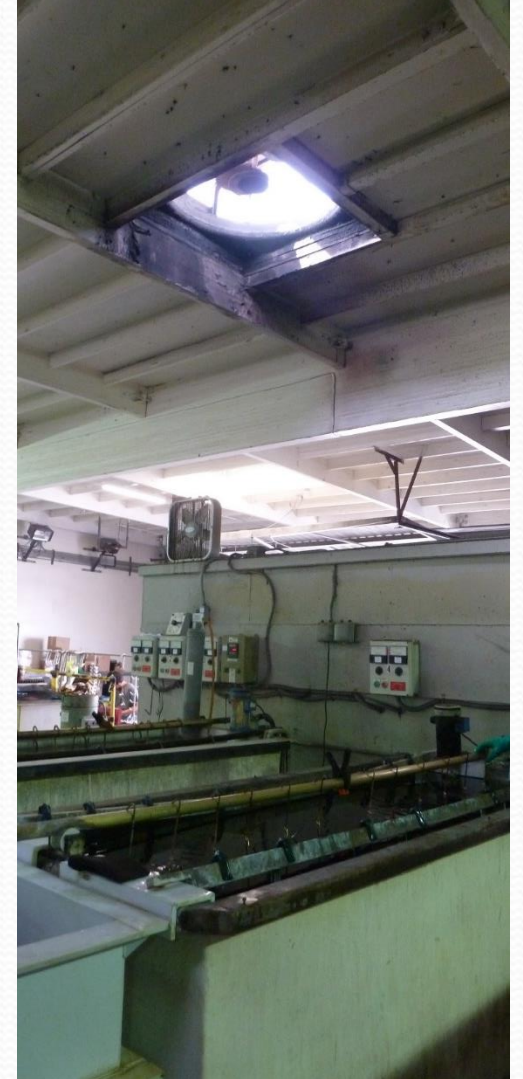


- Roof vents located over the tanks and tank process area can vent hexavalent chromium emissions to the ambient air
- Accumulation of hexavalent chromium can be deposited on the roof and roof vents



# Initial Recommendations for Roof Cleaning

- Roofs with open roof vents
  - Monthly roof cleaning shall be performed using a SCAQMD-approved HEPA vacuum
  - Clean roof vents monthly
- For roofs with no roof vents where sources are vented to pollution controls:
  - Semi-annual roof cleaning shall be performed using a SCAQMD-approved HEPA vacuum



# Tank Process Area– Staff Observations



## Tank Process Areas Practices that can Contribute to Fugitive Emissions

- Some walkways are constructed with materials that are difficult to clean and/or are porous
- Accumulation of material from tank on splash guard, tank lip, tank covers, and floors

## Tank Process Areas Practices that can Minimize Fugitive Emissions

- Frequent cleanings of the tank process area
- Walkways are constructed out of metal or material that is easy to clean
- Excess liquid is collected in sumps below the walkways and cleaned out regularly

# Initial Recommendations for Tank Process Areas

- Walkways shall be constructed out of materials that are easy to clean
- Grates should be cleaned to allow materials to properly flow through
- Tanks, splash guards, tank lip, tank covers, and floors shall be cleaned daily
- Rule specified frequency for cleaning of sumps



# Parts Drying



## Parts Drying Practices that can Contribute to Fugitive Emissions

- Use of compressed air to dry parts can disperse liquid laden with hexavalent chromium
- Use of compressed air near tanks with pollution controls can affect collection efficiency
- Outdoor air drying of parts on carts can have liquid laden with hexavalent chromium that can become fugitive

## Parts Drying Practices that can Minimize Fugitive Emissions

- Use compressed air drying in an enclosure
- Use a centrifugal dryer that collects liquid in a separate container
- Drying of parts conducted indoors

# Initial Recommendations of Parts

## Drying

- Compressed air drying shall not be done unless a physical barrier or enclosure isolates the compressed air drying operation from the tank area or near doors or openings
- No drying of parts in the outdoors
- Carts with liquid or hexavalent chromium dust should be cleaned periodically

# Waste Processing Area – Staff Observations

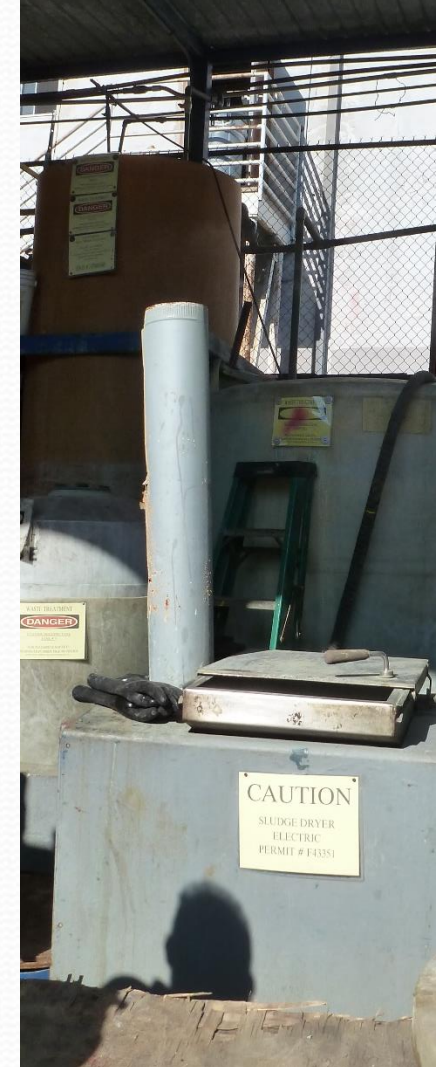
- Some facilities process waste generated created from electroplating and chromic acid anodizing
- Tank sludge is processed through a filter cake press to remove liquid
- Processed tank sludge is collected and treated as hazardous waste

<b>Waste Processing Practices that can Contribute to Fugitive Emissions</b>	<b>Waste Processing Practices that can Minimize Fugitive Emissions</b>
<ul style="list-style-type: none"><li>• Processed sludge in open containers</li><li>• Sludge dryer was emitting fugitive emissions</li><li>• Dust was observed in waste processing area</li></ul>	<ul style="list-style-type: none"><li>• Processed sludge stored in closed containers</li><li>• Sludge dryer connected to an air pollution control device</li><li>• Facility performs frequent clean-up to prevent accumulation of material</li></ul>



# Initial Recommendations of Waste Processing Area

- Conduct filter press activities within an enclosed area
- Maintain solid waste in an enclosed container free from holes, openings, or gaps
- Clean waste processing area at the conclusion of the shift or working day
- Dryers shall be operated in a manner that does not generate visible emissions



# Schedule

- 4<sup>th</sup> Working Group Meeting: July 2017 (tentative)
  - Enclosures, Fugitive Emissions, and Other Sources
- Governing Board Meeting: December 2017

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