

RULE 1469

Presented by Kristina Gonzales

2022 Classes

Hexavalent Chromium Emissions
from
Electroplating & Chromic Acid
Anodizing Operations

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<p>EPA NESHAP: Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks</p> <p><i>Amended in 2012</i></p>	<p>CARB Airborne Toxic Control Measure (ATCM) for Chromium Plating and Chromic Acid Anodizing Facilities</p> <p><i>Amended in 2007</i></p> <p>Undergoing Amendment</p>	<p>SCAQMD Rule 1469</p> <p><i>Amended in 2021</i> (Prior amendment: 11/2/2018)</p>

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The South Coast AQMD is aware of the proposed changes and following the amendment closely. At a minimum, we are required to be equivalent or more stringent.



Should you have any concerns regarding the ATCM, contact ARB directly:

Eugene Rubin
California Air Resources Board
Staff Air Pollution Specialist
TTD - Risk Reduction Branch
(916) 287-8214
Eugene.Rubin@arb.ca.gov

<https://ww2.arb.ca.gov/our-work/programs/air-toxics-program/chrome-plating-atcm/chrome-plating-meetings-workshops>

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Does the
rule apply to
you?

If Yes,
APPLIES TO ENTIRE FACILITY

Chromium Electroplating &
Chromic Acid Anodizing Operations



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Permits may be more stringent than
Rule 1469 **AND**
have additional requirements.

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Why are you here today?

Training is required **every 2 years** by personnel responsible for:

- Environmental compliance
- Maintaining electroplating bath chemistries
- Testing and recording electroplating bath surface tension data
- And all recordkeeping associated with the above

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Note about DEFINITIONS

“Approved Cleaning Method”

- (c) (6) APPROVED CLEANING METHOD means cleaning using a wet mop, damp cloth, wet wash, low pressure spray nozzle, HEPA vacuum, or other method as approved by the Executive Officer.

(c) (7) ASSOCIATED PROCESS TANK means any tank in the process line of a

“Tank Process Area”

- (c) (55) TANK PROCESS AREA means the area in the facility within 15 feet of any Tier I, Tier II, or Tier III Hexavalent Chromium Tank(s), or to the nearest wall of a building enclosure or permanent total enclosure, whichever is closer.

(c) (56) TENSIO METER means a device used to measure the surface tension of a

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Does the tank contain
hexavalent chromium?



Labels *may* include...
(but not limited to)

Strip tank
Olive drab
Iridite
Passivate Type II
Chem Film
Seal Tank
Alodine

Etch Tanks
Conversion Coating
Dow
Deox
Dye
Rinse
Dragout

Analyze for **MAXIMUM** hexavalent chromium in Parts Per Million (PPM)

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Tiers of Tanks

How do you determine the tier of a tank containing hexavalent chromium?

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Tier III

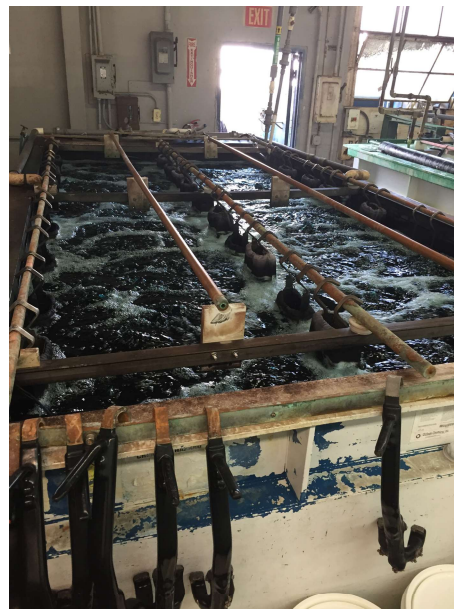
Hexavalent chromium electroplating or
chromic acid anodizing tank

OR

$\geq 1,000$ ppm hexavalent chromium AND air
sparged or electrolytic/rectified
(regardless if heated)

OR

Operated as Tier III tank per Appendix 10



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Appendix 10

Temperature (° F)		Tier III Tank Hexavalent Chromium Concentration (ppm)
140 to <145° F		≥10,400
145 to <150° F		≥5,500
150 to <155° F		≥2,900
155 to <160° F		≥1,600
160 to <165° F		≥800
165 to <170° F		≥400
≥170° F		≥200

Compare using maximum temperature

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Tier II

Not a Tier III tank

AND

Operated as a Tier II tank per Appendix 10

Temperature (° F)	Tier II Tank Hexavalent Chromium Concentration (ppm)
140 to <145° F	5,200 to <10,400
145 to <150° F	2,700 to <5,500
150 to <155° F	1,400 to <2,900
155 to <160° F	700 to <1,600
160 to <165° F	400 to <800
165 to <170° F	180 to <400
≥170° F	≥100 to <200

Compare using maximum temperature

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Tier I

Not a Tier II or Tier III tank

AND

$\geq 1,000$ ppm of
hexavalent chromium



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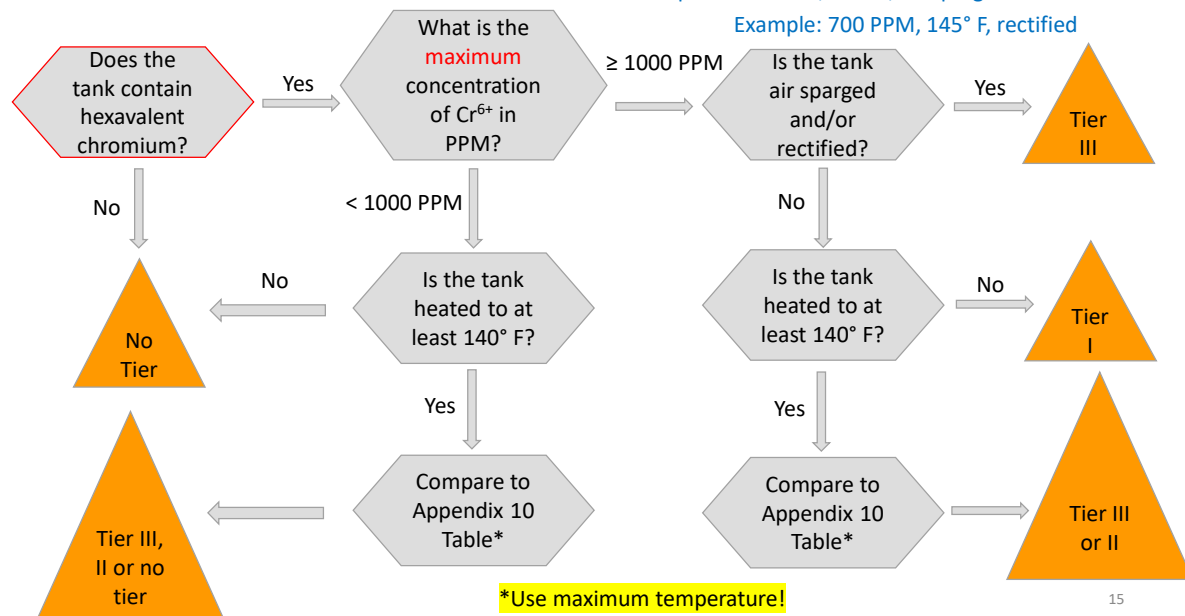
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Tier Determination

Example: 800 PPM, 160° F, not sparged/rectified

Example: 3000 PPM, 100° F, air sparged

Example: 700 PPM, 145° F, rectified



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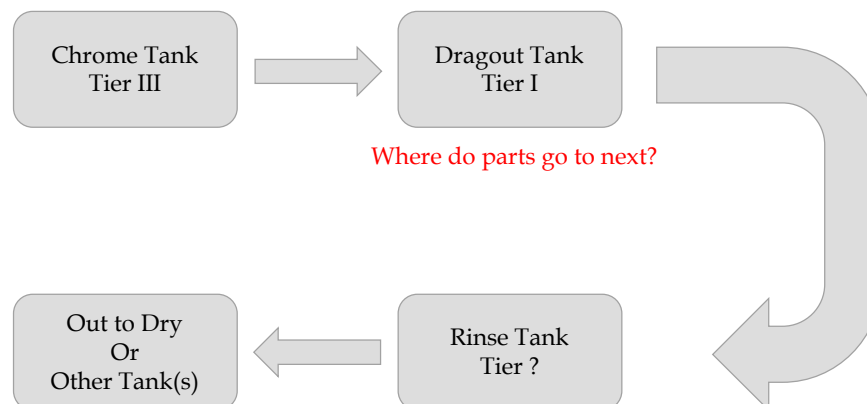
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Temperature (° F)	Tier II Tank Hexavalent Chromium Concentration (ppm)	Tier III Tank Hexavalent Chromium Concentration (ppm)
140 to <145° F	5,200 to <10,400	≥10,400
145 to <150° F	2,700 to <5,500	≥5,500
150 to <155° F	1,400 to <2,900	≥2,900
155 to <160° F	700 to <1,600	≥1,600
160 to <165° F	400 to <800	≥800
165 to <170° F	180 to <400	≥400
≥170° F	≥100 to <200	≥200

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Process Line - Other Potential Tanks



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Tank Labels

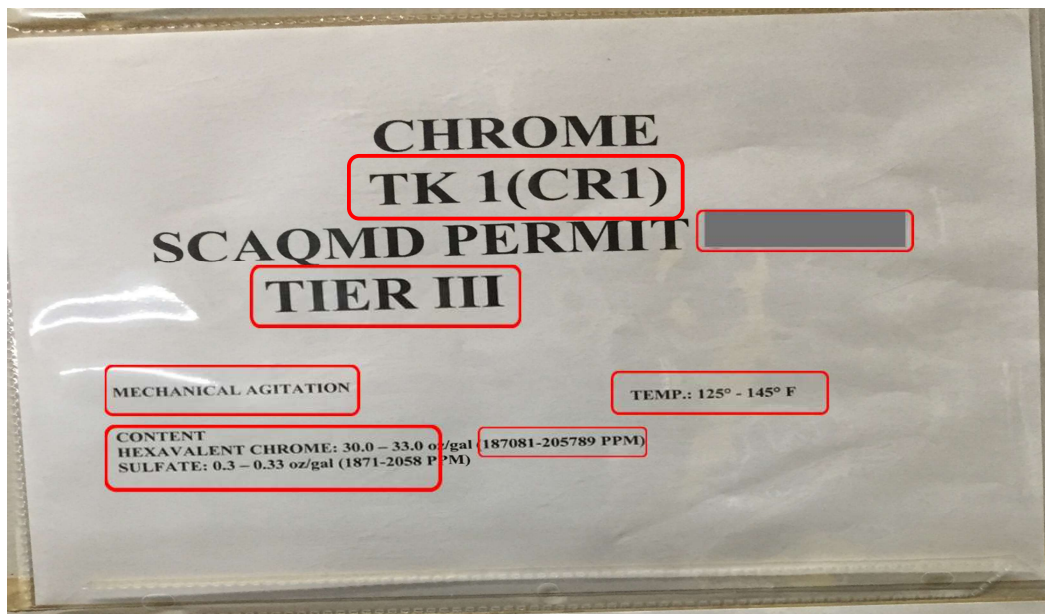
Tank Number/ID
 South Coast AQMD Permit Number
 Bath Contents
 Maximum Concentration of Hexavalent Chromium (ppm)
 Operating Temperature Range
 Agitation Methods Used, if any
 Tier Designation, if applicable

For all tanks within 15 feet of Tier I, Tier II, and Tier III Tanks

Includes drag-out tanks, rinse tanks, and spray rinse tanks!

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64 -

Conversion


Tank ID 64
 Volume: 771.010272 lt
 From top: 5 in
 Length: 26.5 in
 Width: 26.5 in
 Height: 72 in

Danger

AQMD Permit #: - Tier I
 Temperature (F): 83
 Max Conc. (ppm): Cd-0.7. Cr-1700. Pb-0.25.
 Ni-3.08
 Agitation Type N/A
 Rectified N/A

Tank Make-up:
 DIPSOL
 DIPSOL

Person



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NO "Tier Hopping"

Tank Conditions per Permit:

- 1,200 ppm hexavalent chromium
- Not heated
- Air sparged



Tier III

MUST SUBMIT PERMIT APPLICATION!!!

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Building Enclosure Requirements

All Tiers

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Tier I, Tier II, and Tier III tanks must be operated in a building enclosure



Permanent structure enclosed with

roof
walls
floor

which **prevents exposure** to elements with **limited openings** for people, vehicles, equipment or parts.

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Building Enclosure Requirements Specific to Tier II and Tier III Tanks

Building Enclosure Requirements in 1469 section (e)

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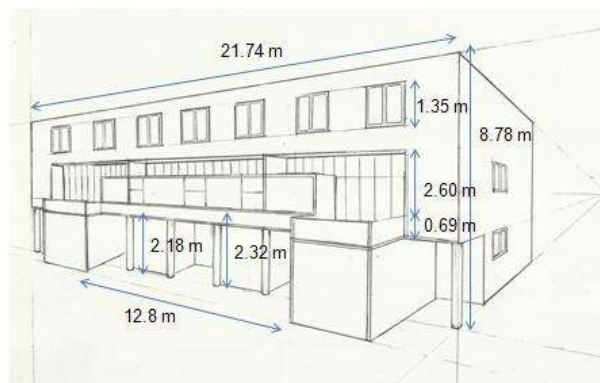
3.5% Rule

Combined **surface area** for all enclosure openings has to be $\leq 3.5\%$ of building enclosure envelope's **surface area**.

Building Enclosure Envelope Includes:

- Exterior walls
- Floor
- Horizontal projection of roof on ground

Calculations and locations must be included in Ongoing Compliance Status & Emissions Report

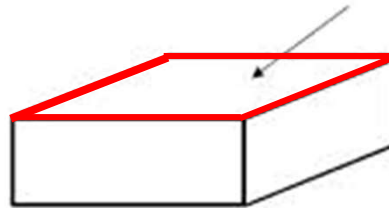
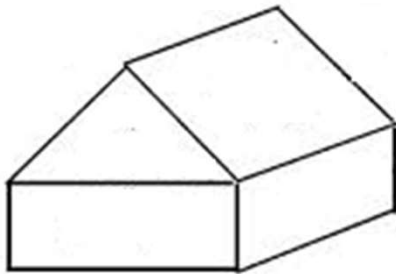


May have more than 1 building enclosure

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“Horizontal Projection of Roof on Ground”



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RESPONSE

Building Enclosure Name: BLDG.

Applicable Tank Permits Nos. Housed in Enclosure: _____

Enclosure Openings			
Individual Opening ID	Location Description	Dimensions (feet)	Area (square feet)
ACCESS DOORS	EAST WALL - N/S	(2) 7x8	112 ✓
CEILING VENTS	VENTS / NORTH EXH	(4) 12" ⌀ + (1) 4x3	15 ✓
17A. Total Openings			127 ✓

Building Enclosure Surfaces		
Surface Description and Location	Dimensions (feet)	Area (square feet)
N / S WALLS	(2) 36' x 11'	792 ✓
E / W WALLS	(2) 90' x 11'	1980 ✓
ROOF / FLOOR	(2) 36' x 90'	6480 ✓
17B. Total Surface Area:		9,252 ✓

Percent Opening = [Total Opening Area (Box 17A) ÷ Total Surface Area (Box 17B)] x 100 = 1.4 %

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The department are 25' x 40' x approx. 15' in height. This gives a building enclosure of 3,950 ft².

There are 2 main openings that are 3' x 7' walk through openings. There are no doors.

No openings are facing any sensitive receptors.

Calculations:

Openings (3' x 7') * 2 = 42 ft².

Overall building envelope $([25' \times 40' \times 2] + [25' \times 15' \times 2] + [40' \times 15' \times 2]) = 3,950 \text{ ft}^2$.

$2 \times [3' \times 7'] \text{ (Openings)} = 42 \text{ ft}^2 / 3,950 \text{ ft}^2 = 0.0106 \text{ or } 1.06\%$.

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Enclosure Openings

PERMANENT openings such as...



Open Doors/Passages



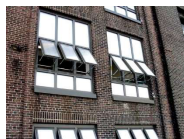
Open Bay Doors



Roof Openings

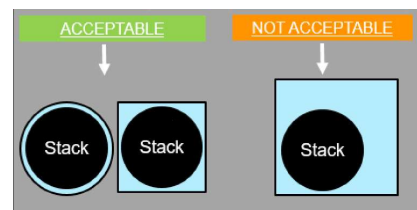


Vents



Open Windows

EXCLUDES openings to accommodate stacks or ducts



Affects 3.5% limit

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Openings that CLOSE or use one of the following are NOT counted towards calculation of enclosure openings:



Automatic closing door



Overlapping plastic strip curtains

OR other equivalent method that minimizes air movement within building enclosure AND can be demonstrated to Executive Officer



Vestibule



Airlock system

Does not affect 3.5% limit

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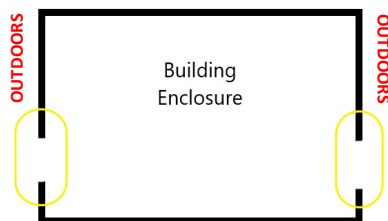
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Scenario

Enclosure openings to exterior at opposite ends of building enclosure allowing air passage

Applies to Tier I tanks (without 2 hour limit) starting 1/1/23.

Cannot be simultaneously open (except for passage of vehicles, equipment, or people) for more than **2 hours per operating day** by using one of the following:



- Use a method discussed in the previous slide for ONE of the openings

OR

- Use a barrier that restricts air from moving through building enclosure (large piece of equipment, etc.)

no recordkeeping required

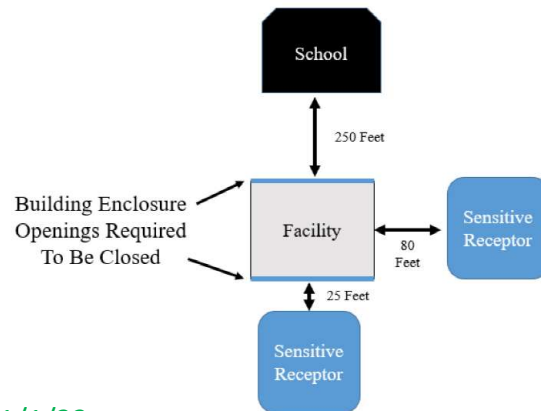
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Scenario

Enclosure openings that directly face and open towards the *nearest* sensitive receptor and school each **within 1,000 feet** (property line to enclosure opening)

- Close the opening using a method discussed in previous slide
- Can only open for movement of vehicles, equipment, or people



Applies to Tier I Tanks starting 1/1/23.

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- (49) SENSITIVE RECEPTOR means any residence including private homes, condominiums, apartments, and living quarters; education resources such as preschools and kindergarten through grade twelve (k-12) schools; daycare centers; and health care facilities such as hospitals or retirement and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing.



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Scenario

Enclosure openings on roof **within 15 feet**
from edge of Tier II or Tier III tank

Keep CLOSED unless for:

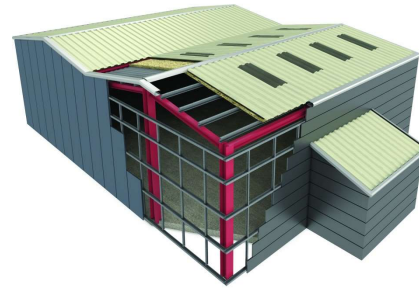
Access for equipment or parts

OR

Intake/air circulation for building enclosure
AND does not create air movement
impacting collection efficiency of Air
Pollution Control System

OR

Equipped with HEPA or Air Pollution
Control Device



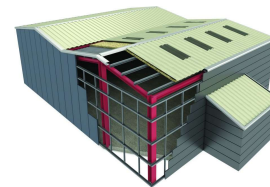
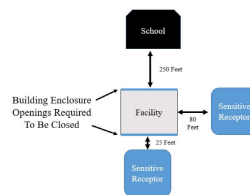
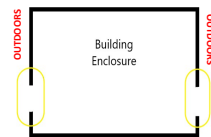
If ceiling is >15 feet from top of tanks → doesn't apply

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Exemption to Building Enclosure Requirements (housing Tier II and Tier III tanks)

IF you submitted a permit application to South Coast AQMD to install an add-on air pollution control device (APCD) OR are required to for Tier II or Tier III tanks, you are exempt from:



... until APCD is installed and commences normal operation

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Housekeeping

Facility Wide Requirements

Maintain housekeeping records!!!

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Approved Cleaning Methods



Wet Mop



Wet Wash



HEPA
Vacuum



Damp Cloth



Low Pressure
Spray Nozzle
(35 PSI or Less)

Other
Approved
Method

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Chromic Acid Storage

Store chromic acid powder, flakes, or other substance that may contain **hexavalent chromium** in CLOSED CONTAINER in ENCLOSED STORAGE when not in use.



Chromic Acid Transportation

Transport chromic acid powder or flakes or anything with hexavalent chromium in CLOSED CONTAINERS to Tier I, II, and III tanks.



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Store in Closed Container or Enclosed Storage Area by 1/1/23 (when not in use)

Cleaning Supplies for Housekeeping



Reusable Tank Covers for Tier I, II, and III Tanks



Reusable Hangers used in Tier I, II, and III Tanks



Anodes & Cathodes used in Tier I, II, and III Tanks



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Clean Or Contain Spills Immediately And No Later Than **1 Hour After Spill**

CLEAN (using approved cleaning methods)

OR

CONTAIN (using containment device)

...any liquid/solid that may contain
hexavalent chromium



Clean Surfaces **Weekly**

Use approved cleaning methods on:

- Enclosed storage area surfaces
- Open floor areas
- Walkways around **Tier I, II, and III** tanks
- Any surface potentially contaminated with **hexavalent chromium**
- Any surface potentially accumulating dust



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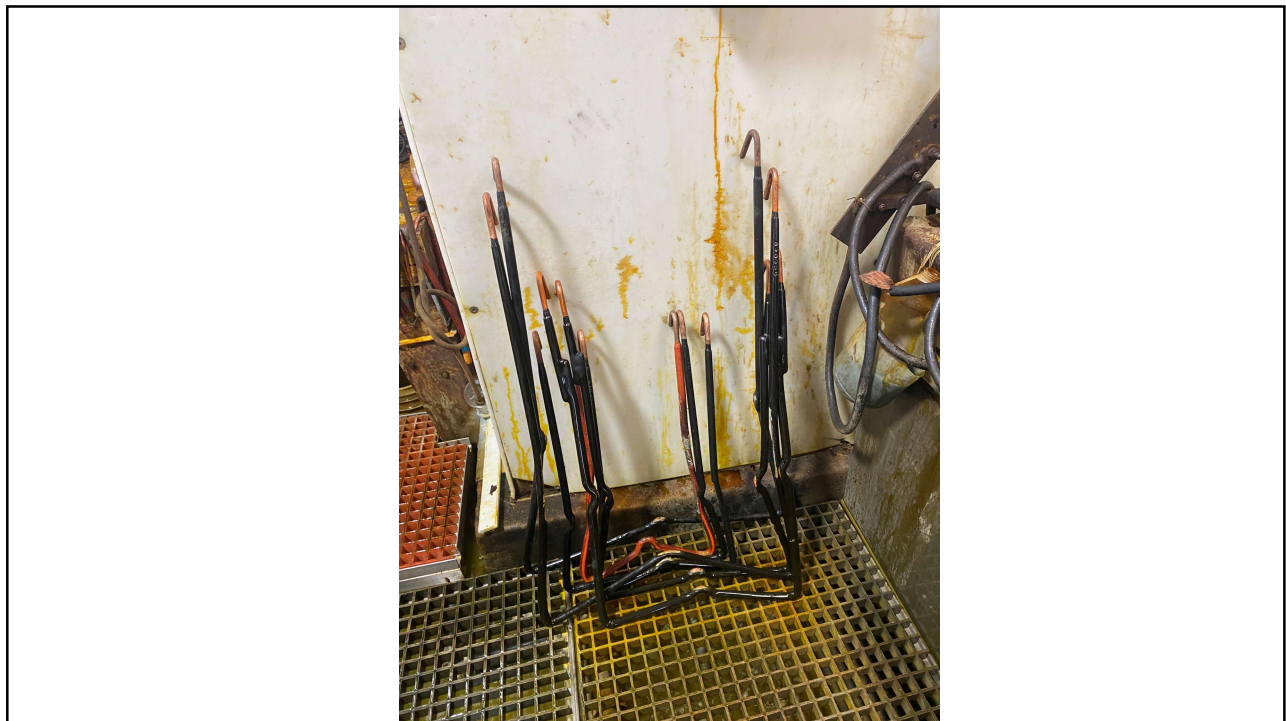
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Handling Of Chromium Due To Housekeeping

- STORE, DISPOSE OF, RECOVER, or RECYCLE **chromium** and **chromium-containing wastes** from housekeeping activities in a way that does not lead to fugitive emissions.
- Containers with **chromium-containing waste** shall be kept closed unless filling or emptying.



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NO Fabric Flooring

Not allowed on walkways
within 15 feet
of a Tier I, Tier II, and Tier III tank
where hexavalent chromium
materials can become trapped.



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HEPA Vacuum

- Filter should be free of tears, holes, or other damage
- Securely latched & situated to prevent air leakage



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Best Management Practices

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Minimize Dragout

(Chromium Electroplating & Chromic Acid Anodizing Tanks)

Applies to all Tier I, II, and III Tanks starting 1/1/23.

Automated Line

- Install **containment device** between tanks so liquid does not fall into spaces between tanks
- Containment devices shall capture and return liquid to tanks
 - ✓ Keep visibly clean

Non-Automated Line

- Handle parts so liquid does not drip outside of tanks UNLESS captured by **containment device**
- If spraying down parts, **splash guard needed**
 - ✓ Capture and return liquid to tanks
 - ✓ Keep visibly clean

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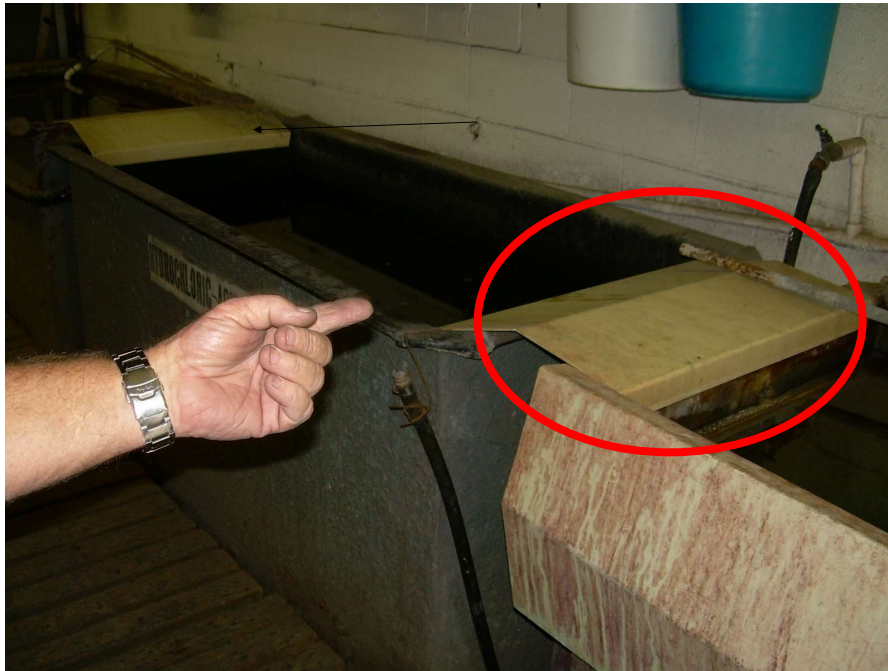
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Containment Device - Examples



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Splash Guards - Examples



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NO Air Sparging When...

No chrome electroplating/anodizing is occurring

OR

Chromic acid is being added to tank



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Spray Rinse Operations

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Spray Rinse Operations

Directly **AFTER** Tier II or Tier III Tanks

Applies to Tier I Tanks starting 1/1/23.

Parts from Tier II and Tier III tanks must be spray rinsed in one of the following manners:

1. FULLY LOWERED in a tank where liquid is captured inside tank **OR**
2. ABOVE TANK by -
 - Installing splash guards free of holes/cracks. Clean **weekly** with water

OR

- Using low pressure spray nozzle where water flows into tank
(*ONLY IF a overhead crane system restricts installation of splash guards*)

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Buffing, Grinding, & Polishing Operations

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Building Enclosure

Buffing, grinding, & polishing operations must be conducted in a **building enclosure**



Barrier applies to Tier I, II, and III tanks starting on 1/1/23.

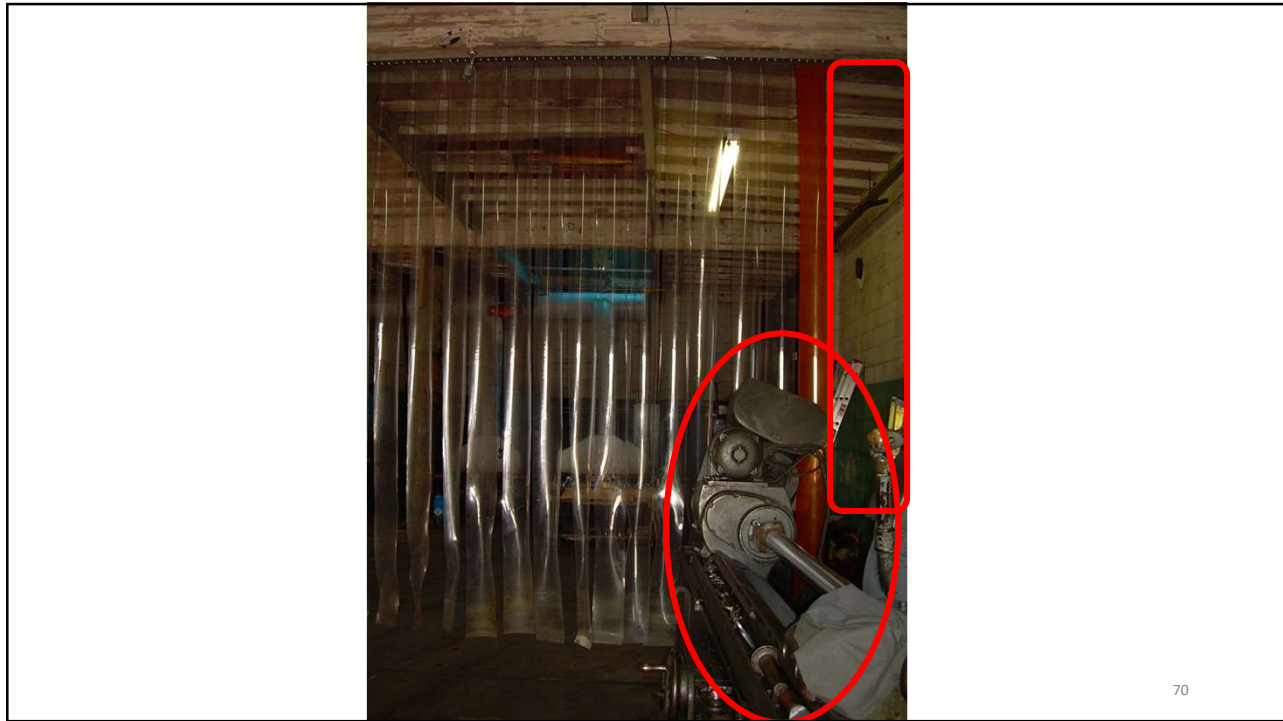
Barrier

A **barrier** must be installed between buffing, grinding, & polishing operations and chrome electroplating/anodizing tanks



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Clean Floors near Buffing, Grinding, Polishing Stations

Use approved cleaning method to clean floors **within 20 feet** of machines on days buffing, polishing, or grinding activities are conducted.



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Compressed Air Operations

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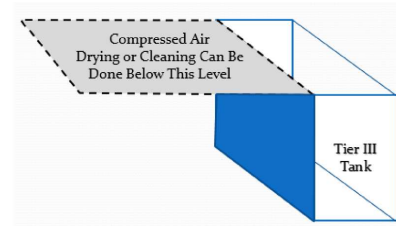
Compressed Air Cleaning or Drying

DO NOT conduct **within 15 feet** of a Tier II or Tier III tank unless:

BARRIER separates operation from tank

OR

Conducted in PERMANENT TOTAL ENCLOSURE



PTE – Building Enclosure free of cracks, breaks, deterioration AND meets U.S. EPA Method 204 design requirements OR other design approved by South Coast AQMD (Entire room under negative pressure)

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Tier I Tanks – Requirements

Temperature gauge that is calibrated annually



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Tier II Tanks - Requirements

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Tier II Tanks

Temperature Data Logger
(Calibrate & maintain per manufacturer)

AND

ONE of the following:

Tank Cover

Mechanical Fume Suppressant



Method Approved by South Coast AQMD

Temperature Gauge
(Calibrate annually)

AND

OR

Air Pollution Control Device
or
Approved Alternative

(Meeting Tier III Tank Requirements)

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ALL Tier III Tanks

Temperature gauge that is
calibrated annually



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Tier III Tanks - Requirements

For Chromium Electroplating & Chromic Acid Anodizing Tanks

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Table 1: Hexavalent Chromium Emission Limits for Hard and Decorative Chromium Electroplating and Chromic Acid Anodizing Tanks

Facility Type	Distance to Sensitive Receptor (feet)	Annual Permitted Amp-Hrs	Hexavalent Chromium Emission Limit (mg/amp-hr)	Minimum Air Pollution Control Technique
Existing Facility	$\leq 330^1$	$\leq 20,000$	0.01	Use of Certified Chemical Fume Suppressant at or below the certified surface tension. ³
Existing Facility	$\leq 330^1$	$> 20,000$	0.0015 ²	Add-on air pollution control device(s) or add-on non-ventilated air pollution control device(s).
Existing Facility	$> 330^1$	$\leq 50,000$	0.01	Use of Certified Chemical Fume Suppressant at or below the certified surface tension. ³
Existing Facility	$> 330^1$	$> 50,000$ and $\leq 500,000$	0.0015 ²	Use of an air pollution control technique that controls hexavalent chromium.
Existing Facility	$> 330^1$	$> 500,000$	0.0015 ²	Add-on air pollution control device(s) or add-on non-ventilated air pollution control device(s).

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Modified Facility	Any	Any	0.0015 ²	Using an add-on air pollution control device(s), or an approved alternative method pursuant to subdivision (i).
New Facility	Any	Any	0.0011 ²	Using a HEPA add-on air pollution control device, or an approved alternative method pursuant to subdivision (i).

¹ Distance shall be measured, rounded to the nearest foot, from the edge of the chromium electroplating or chromic acid anodizing tank nearest the sensitive receptor (for facilities without add-on air pollution control devices), or from the stack or centroid of stacks (for facilities with add-on air pollution control devices), to the property line of the nearest sensitive receptor. The symbol \leq means less than or equal to. The symbol $>$ means greater than.

² As demonstrated by source test requirements under subdivision (k).

³ Alternatively, a facility may install an add-on air pollution control device(s) or add-on non-ventilated air pollution control device(s) that controls hexavalent chromium emissions to below 0.0015 mg/amp-hr as demonstrated through source test requirements under subdivision (k).

Existing Facility – in operation before October 24, 2007

New Facility – initial operation of a facility on or after October 24, 2007
(doesn't include installation of a new chrome electroplating/anodizing tank at an existing facility)

Modified Facility – modified on or after October 24, 2007

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Option 1 – Certified Chemical Fume Suppressants



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Certified Fume Suppressants

- Choose a certified fume suppressant applicable to your process
- Comply with the associated surface tension limit
 - NOTE – Your permit may have a STRICTER limit. Follow the STRICTER limit.
 - Limits differ depending on the instrument used

<http://www.aqmd.gov/home/programs/business/business-detail?title=fume-suppressants>

Hard Chrome Plating

Company	Product	Stalagmometer Measured Surface Tension (dynes/cm)	Tensiometer Measured Surface Tension (dynes/cm)	Contact Name	Telephone
Atotech USA	Fumetrol 21 LF2	≤ 30	≤ 27	Caleb J. Morrison	800-443-9746
Hunter Chemical LLC	HCA-8.4	≤ 33	≤ 30	Ben Brock	215-461-1900 ext. 208

Non-PFOS Chemical Fume Suppressants Chromic Acid Anodizing/Decorative Chrome Plating

Company	Product	Stalagmometer Measured Surface Tension (dynes/cm)	Tensiometer Measured Surface Tension (dynes/cm)	Contact Name	Telephone
Hunter Chemical LLC	HCA-8.4	≤ 25	≤ 22	Ben Brock	215-461-1900 ext. 208
MacDermid Enthone	Macuplex STR NPFX	≤ 32	≤ 30	Chrissy Pullara	203-278-6783
ProCom LLC*	Dicolloy CRPF*	≤ 32	≤ 29	Gerald Durham	(888) 816-5733

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Surface Tension Measurements

*"Measure every **third operating day**, but not less than once per week"*

If you exceed the surface tension limit:

- Measure surface tension **daily for 20 consecutive days**
- If after 20 days your measurements are \leq limit, resume schedule above

Tensiometer – Use U.S. EPA Method 306(B) (40 CFR 63 Appendix A)

Stalagmometer – Follow Appendix 9 in Rule 1469 OR
approved alternative method approved by South Coast AQMD

Keep measuring devices in good operating condition (calibrated, clean, etc)

Recordkeeping – Record fume suppressant additions. Include type, volume, date, & time



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Changes to Fume Suppressants on Certified List

We will notify you of any changes.

Make sure you are signed up for the
Rule 1469 information emails.

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Option 2 - Add-On Air Pollution Control Device (APCD)



*Must meet emission limit
through source test.*

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Option 3 - Approved Alternative Compliance Method



- Submit permit application according to Appendix 7
- Demonstrate alternative method is
 - Enforceable AND
 - Provides equal or greater hexavalent chromium emissions reductions AND
 - Provides an equal or greater risk reduction than compliance with emission limits in tables

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Additional Measures

Air Pollution Control Device &
Chemical Fume Suppressant

Mechanical Fume Suppressant



Foam Blanket



If additional measures are used, must be maintained per passing source test conditions.

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Tier III Tanks - Requirements

EXCLUDING Chromium Electroplating & Chromic Acid Anodizing Tanks

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Emission Limits – Rule 1469 (h)(4)(A)

- (i) 0.0015 mg/amp-hr, for existing or modified facilities, if any tank(s) vented to an air pollution control device are electrolytic;
- (ii) 0.0011 mg/amp-hr, for new facilities, if any tank(s) vented to an air pollution control device are electrolytic;
- (iii) 0.20 mg/hr, if all tanks vented to the add-on air pollution control device are not electrolytic and the ventilation system has a maximum exhaust rate of 5,000 cfm or less, or
- (iv) 0.004 mg/hr-ft², with the applicable surface area based on the surface area of all Tier III Hexavalent Chromium Tank(s) and other tanks required to be vented to an add-on air pollution control device with a SCAQMD Permit to Operate, provided all tanks are not electrolytic if the ventilation system has a maximum exhaust rate of greater than 5,000 cfm.

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Option 1 – Add-On Air Pollution Control Device (APCD)



Must meet emission limit through source test.

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Option 2 – Approved Alternative Compliance Method



- Submit permit application according to Appendix 7
- Demonstrate alternative method is
 - Enforceable AND
 - Provides equal or greater hexavalent chromium emissions reductions AND
 - Provides an equal or greater risk reduction than compliance with emission limits in tables

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If Tier III Tank existed prior to **11-2-2018**...

(EXCLUDING chromium electroplating & chromic acid anodizing tanks)

Table 2: Permit Submittal Schedule for Add-on Air Pollution Control Devices for Previously Existing Tier III Hexavalent Chromium Tanks¹

Electrolytic Process at the Facility	Compliance Date for SCAQMD Permit Application Submittal for Add-on Air Pollution Control Device
Chromic Acid Anodizing	May 1, 2019
Hard Chromium Electroplating	November 2, 2019
Decorative Chromium Electroplating	April 30, 2020

¹ For multiple electrolytic processes at a facility, the owner or operator shall comply with the earliest compliance date.

In the meantime...

- Cover Tier III tank no later than **30 minutes** after tank operation ceases **AND**
- Tank cover should be free of holes, tears, and gaps

*Air Pollution Control Device must be installed no later than **12 months** after Permit to Construct is issued.
(Extensions are possible, but need approval)*

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Exemptions for Adding APCD to Tier III Tanks

(EXCLUDING chromium electroplating & chromic acid anodizing tanks)

Must comply with entire list below:

- a) The surface area is less than or equal to four (4) square feet;
- b) The hexavalent chromium concentration is less than or equal to 11,000 ppm;
- c) The tank is operated and permitted at less than or equal to 210° F;
- d) The tank is operated at a temperature between 170-210° F for less than or equal to two and one-half (2.5) hours per week; and
- e) The tank complies with the tank cover requirements in paragraph (h)(5) and the temperature data logger requirements in paragraph (n)(3), and the data logger must log the duration of time and temperature of the tank to demonstrate compliance with (d) above.

OR

Uncontrolled hexavalent chromium emission rate of the tank is less than 0.2 mg/hr, as demonstrated by a SCAQMD approved source test.

Only for ONE tank

If you fail to comply with the above, you will be required to install an APCD.

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Trivalent Chrome Plating Tanks

Requirements

95

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Use **at least one** of the following methods:

Method of compliance	Requirement
Add-on air pollution control device, or chemical fume suppressants forming a foam blanket, or mechanical fume suppressants (e.g. polyballs)	≤ 0.01 milligrams of total chromium per dry standard cubic meter of air (mg/dscm) (4.4×10^{-6} gr/dscf) as demonstrated with an initial source test using an approved method pursuant to paragraph (k)(2)
Chemical fume suppressants containing a wetting agent that is not a PFOS based fume suppressant	Use wetting agent as bath component and comply with recordkeeping and reporting provisions of paragraphs (o)(10) and (p)(5)

Submit report within 30 days of switching to trivalent chrome plating bath.

Maintain records of bath components purchased, with wetting agent identified.

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Source Test Requirements

For all Tier III Tanks (includes Tier II tanks using an APCD)

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Table 3: Source Tests Schedule

Facility-wide Permitted Annual Ampere-Hours	Due Date of Initial Source Test Protocol ^a	Initial Source Test Date	Due Date of Subsequent Source Test Protocol	Subsequent Source Tests
> 20,000,000	No later than May 1, 2019	No later than 120 days after approval of the initial source test protocol.	180 days prior to the due date of the subsequent source test.	No later than 60 months from the day of the most recent source test that demonstrates compliance with all applicable requirements
≤ 20,000,000 and > 1,000,000	No later than November 2, 2019			No later than 84 months from the day of the most recent source test that demonstrates compliance with all applicable requirements
≤ 1,000,000	No later than April 30, 2020			No later than 84 months from the day of the most recent source test that demonstrates compliance with all applicable requirements

^a New or modified air pollution control techniques used to meet the emission limits under paragraphs (h)(1), (h)(2), or (h)(4) (permitted after November 2, 2018) shall submit the initial source test protocol 60 days after initial start-up of the air pollution control technique.

May conduct initial source test after 120 days, IF approved by South Coast AQMD.

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Subsequent Source Test Deadlines

Old source test conducted between 1/1/15-11/2/18



No later than January 1, 2024

Emissions screening test conducted after 11/2/18



No later than 60/84 months after emissions screening test

Source test conducted after 11/2/18



No later than 60/84 months after source test

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“Subsequent Source Test” Option #1 – Source Test



Most recent approved source test protocol may be used if no changes have occurred to the:

- Tank dimensions
- Collection slots
- Ventilation flow rate
- Sampling location(s)
- Analytic method(s)

Use of one of the following methods:

- CARB Test Method 425
- U.S. EPA Method 306 with a minimum of three test runs
- SCAQMD Method 205.1 for results reported as total chromium

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“Subsequent Source Test” Option #2 – Emissions Screening Test

Use of a one run test with a South Coast AQMD approved protocol representative of operating conditions during most recent source test.

You would need to conduct a source test instead if any of the following have changed since your last source test:

- Tank dimensions
- Collection slots
- Ventilation flow rate
- Sampling location(s)
- Analytic method(s)

Submit emission screening test results within **30 days** after receiving results.

IF the emissions screening test results show:

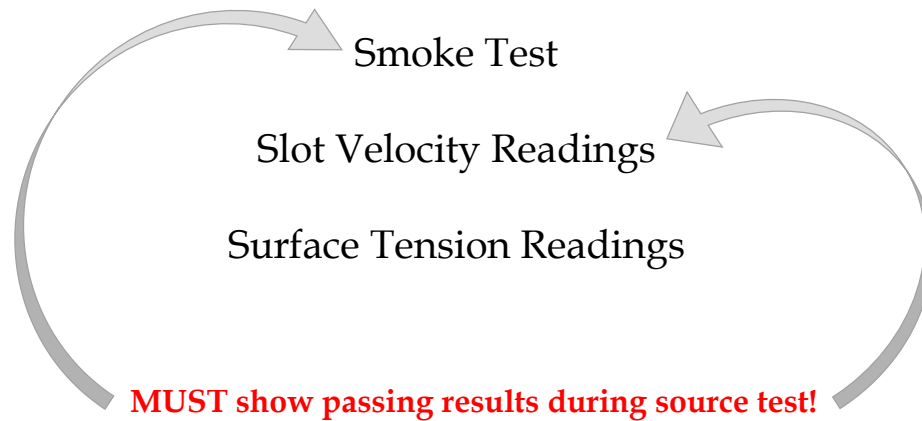
- Failure of the capture efficiency test (ex. slot velocities)
- OR**
- An exceedance of an emission limit specified in a permit
- OR**
- An exceedance of an emission limit in Rule 1469...

...then conduct source test using approved test methods in Rule 1469.

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Additional Measurements & Testing



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Multiple Source Tests

There may be multiple “initial source test” dates to be aware of, which would lead to multiple “subsequent source test” deadlines.

KEEP TRACK OF THESE DATES!

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Source Tests

Rule1469info@aqmd.gov
Sourcetesting@aqmd.gov

- Notify South Coast AQMD **at least 60 calendar days** before source test date
- Submit source test results to South Coast AQMD **no later than 90 calendar days** after completion of source test.

Notify and submit reports to permit engineer (for open applications) & inspector

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Monitoring & Equipment

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Ampere-Hour Meters

(On chromium electroplating or chromic acid anodizing tanks)

Installed & Maintained per manufacturer

Continuous

Non-Resettable

Operating on electrical power lines

SEPARATE METER FOR

EACH Chrome Plating/Anodizing Tank

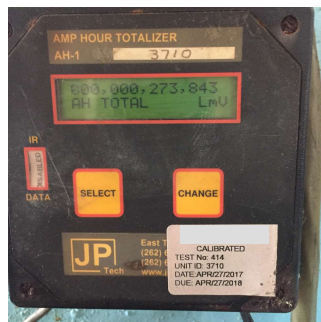


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Ampere-Hour Meter Replacement

(On chromium electroplating or chromic acid anodizing tanks)



1. Take photograph of ampere-hour reading of meter being replaced **AND**
2. Take photograph of ampere-hour reading on NEW meter after installation

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Ampere-Hour Meter Readings

(On chromium electroplating or chromic acid anodizing tanks)

Calculate & record **monthly** usage for each tank.

Every **month**, calculate & record year-to-date used.

Most permits also require DAILY readings!

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Table 4:
Pressure and Air Flow Measurement Parameters

Permitted Air Pollution Control Technique	Location	Parameter Monitored	Units	Monitoring Start Date
Push-Pull Systems	Push Manifold	Static Pressure	Inches of water	60 Days After Completion of Initial Source Test or within January 1, 2019
All	Collection Manifold or Any Location within the System Using a Flow Meter	Static Pressure or Volumetric Flow Rate	Inches of water or Actual Cubic Feet per Minute	60 Days After Completion of Initial Source Test or within January 1, 2019
Existing on or Before November 2, 2018	Across Each Stage of the Control Device	Differential Pressure	Inches of water	November 2, 2018
Installed after November 2, 2018	Across Each Stage of the Control Device	Differential Pressure	Inches of water	60 Days After Completion of Initial Source Test



Air Pollution Control Device

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Differential Pressure Gauges



- Calibrate per manufacturer at least **once every calendar year**
- Equip with ports for calibration
- Maintain per manufacturer specifications

RECORD VALUES **WEEKLY**

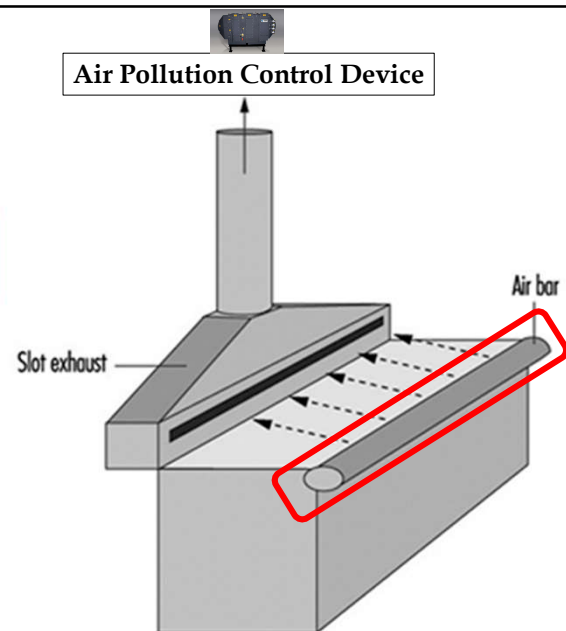
- Accessible & in clear sight
- Label each with acceptable range -
 - ✓ Source test range **OR** permit limit
 - ✓ **Maintain within these ranges**

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Table 4:
Pressure and Air Flow Measurement Parameters

Permitted Air Pollution Control Technique	Location	Parameter Monitored	Units	Monitoring Start Date
Push-Pull Systems	Push Manifold	Static Pressure	Inches of water	60 Days After Completion of Initial Source Test or within January 1, 2019
All	Collection Manifold or Any Location within the System Using a Flow Meter	Static Pressure or Volumetric Flow Rate	Inches of water or Actual Cubic Feet per Minute	60 Days After Completion of Initial Source Test or within January 1, 2019
Existing on or Before November 2, 2018	Across Each Stage of the Control Device	Differential Pressure	Inches of water	November 2, 2018
Installed after November 2, 2018	Across Each Stage of the Control Device	Differential Pressure	Inches of water	60 Days After Completion of Initial Source Test



Will not apply if you **DO NOT** have a push system

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Push Pressure Gauges



One for **EACH** Tier III tank
(and Tier II and Tier I, if
applicable) with a push system

Gauges must be in
Inches of Water Column

- Accessible & in clear sight
- Label each with acceptable range -
 - ✓ Source test range **OR** permit limit
 - ✓ **Maintain within these ranges**

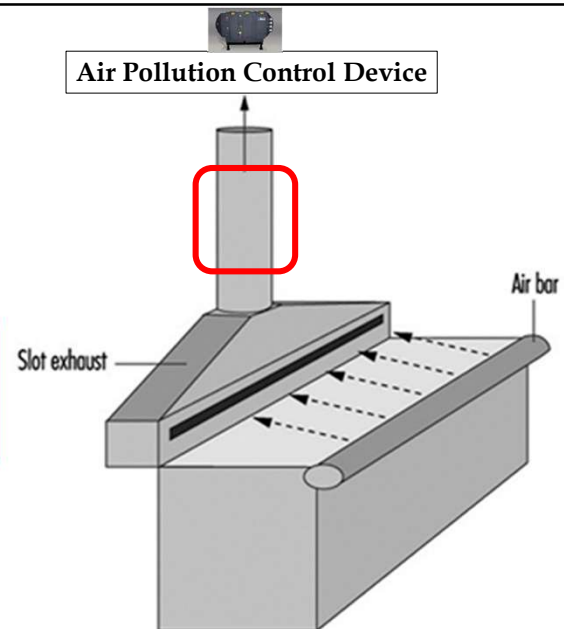
RECORD VALUES **WEEKLY**

112

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Table 4:
Pressure and Air Flow Measurement Parameters

Permitted Air Pollution Control Technique	Location	Parameter Monitored	Units	Monitoring Start Date
Push-Pull Systems	Push Manifold	Static Pressure	Inches of water	60 Days After Completion of Initial Source Test or within January 1, 2019
All	Collection Manifold or Any Location within the System Using a Flow Meter	Static Pressure or Volumetric Flow Rate	Inches of water or Actual Cubic Feet per Minute	60 Days After Completion of Initial Source Test or within January 1, 2019
Existing on or Before November 2, 2018	Across Each Stage of the Control Device	Differential Pressure	Inches of water	November 2, 2018
Installed after November 2, 2018	Across Each Stage of the Control Device	Differential Pressure	Inches of water	60 Days After Completion of Initial Source Test



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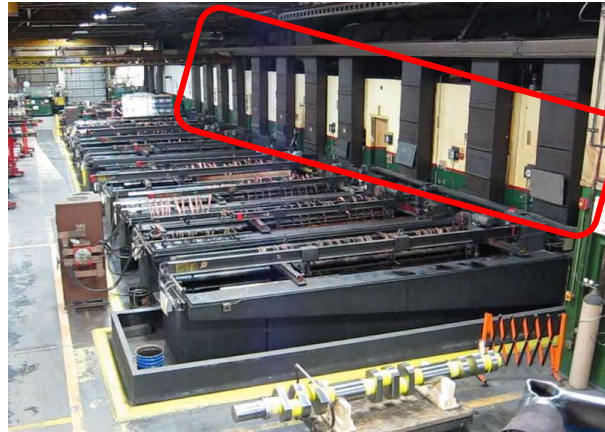
Air Flow Gauges



- Install & maintain per manufacturer specifications
- Accessible & in clear sight
- Label each with acceptable range -
 - Source test range **OR** permit limit
 - **Maintain within these ranges**

RECORD VALUES **WEEKLY**

May have one for each Tier III
(and Tier II and Tier I, if applicable) tank.

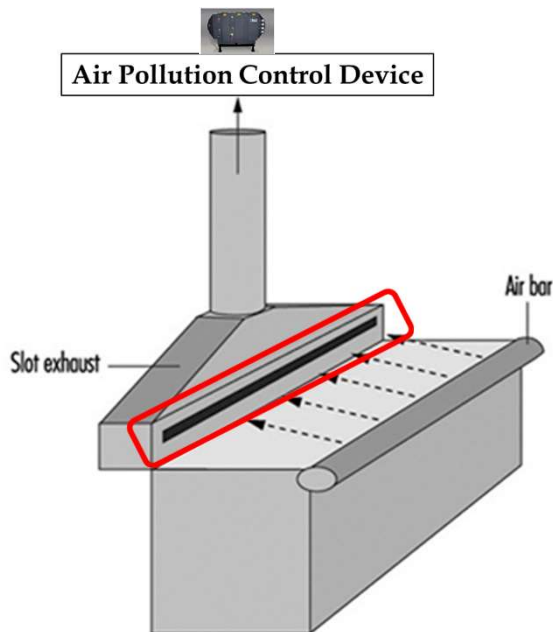


Gauges must be in
Inches of Water Column
or
Cubic Feet Per Minute

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Slot Velocity - Measurements



Required for each Tier II and
Tier III tanks vented to APCD
once **every 180 days**.

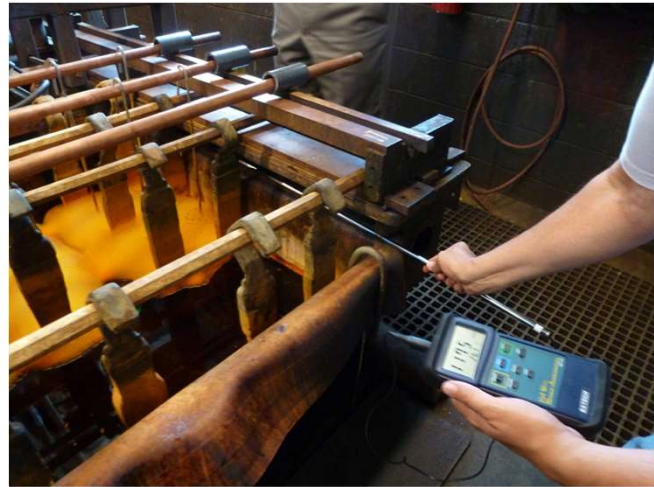


Instruments:

- Hot-wire anemometer **OR**
- Vane anemometer **OR**
- Alternative method approved by
South Coast AQMD

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Slot Velocity Measurement - Prior to "Initial Source Test"

- Measure at least EACH slot
 - If it's 1 long slot, measure a few representative points equally spaced out

NOTE: Even if 1 measurement falls in row 1 or 2 and all other measurements fall in row 1, you must follow the row with the higher number.

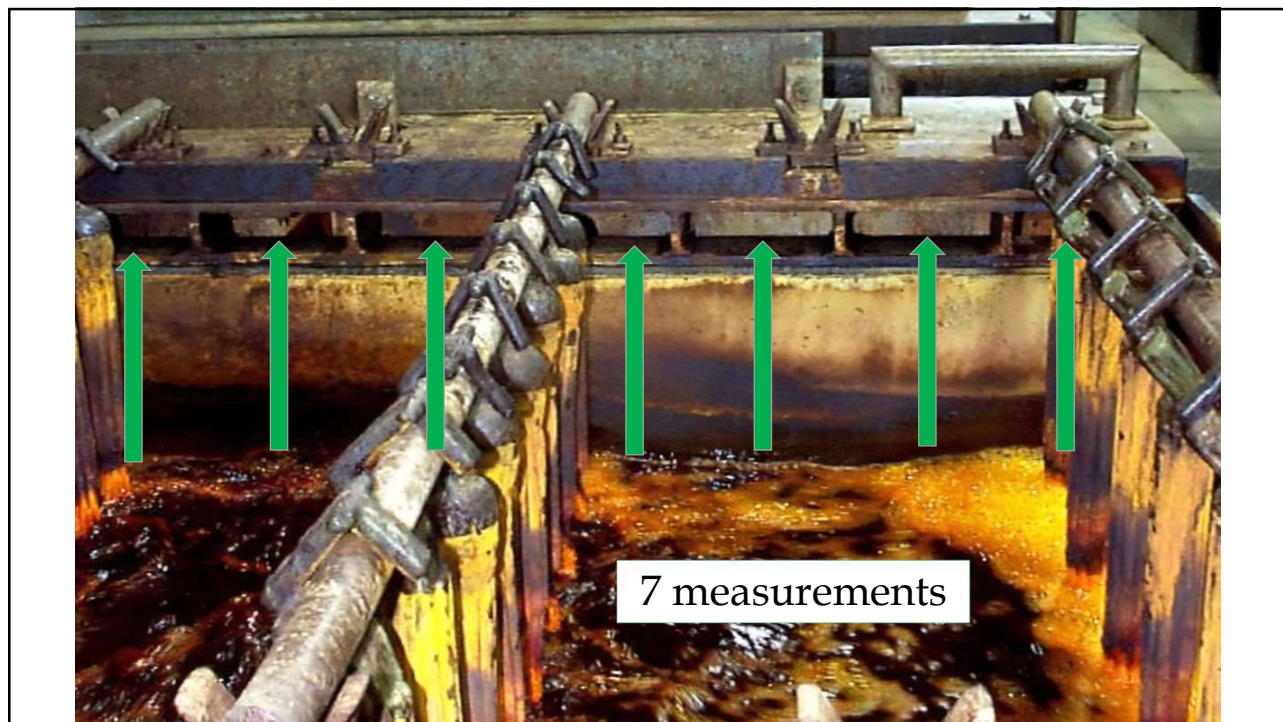
Example - You have 3 slots. 2 slots are at 2,200 fpm. 1 slot is at 1,700fpm. You would fall in row 3 and need to shut down associated Tier II and Tier III tanks.

Table 5: Add-on Air Pollution Control Device Parameter Monitoring

	Collection Slot(s) Velocity ¹	Required Action
Row 1: Acceptable Measurement	> 95% of the most recent passing source test or emission screening: or $\geq 2,000$ fpm	None
Row 2: Repairable Measurement	90-95% of the most recent passing source test or emission screening test, or $< 2,000$ fpm and $> 1,800$ fpm	Repair or replace, and re-measure within 3 calendar days of measurement
Row 3: Failing Measurement	$< 90\%$ of the most recent passing source test or emission screening test, or $< 1,800$ fpm	Immediately shut down any tanks controlled by the add-on air pollution control device that had a failing measurement

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Repairable and Failing Measurements

Repairable

- Repair/replace, and re-measure within **3 days** of original measurement
 - If re-measured value is in "acceptable" range → no further action
 - If re-measured value is in "repairable" or "failing" range → **SHUT DOWN** associated Tier II and Tier III tanks
 - Remain shutdown until "acceptable" measurement is measured

Failing

- **SHUT DOWN** associated Tier II and Tier III tanks until "acceptable" measurement is measured

SHUT DOWN

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Slot Velocity Measurement – AFTER “Initial Source Test”

- Measure the same way it was measured during your most recent passing source test

Go to handout #11



If measurement is over
2,000 fpm
→ acceptable measurement

Table 5: Add-on Air Pollution Control Device Parameter Monitoring

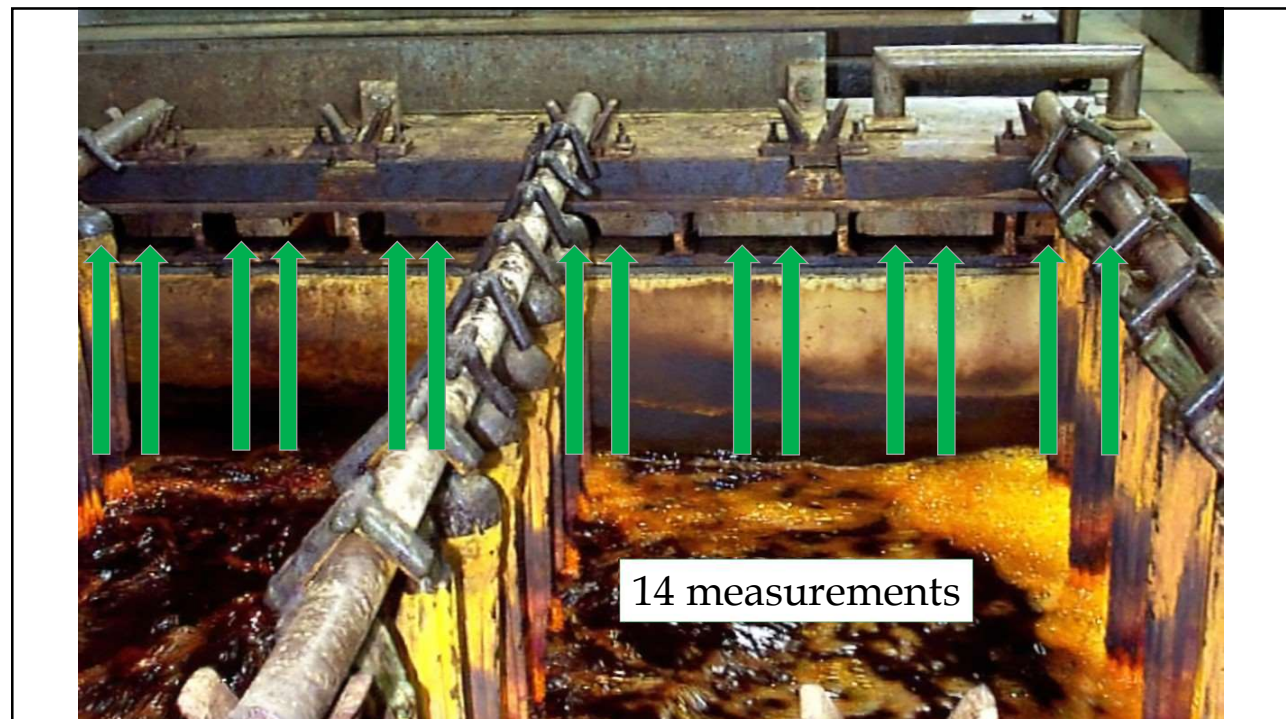
	Collection Slot(s) Velocity ¹		Required Action
Row 1: Acceptable Measurement	> 95% of the most recent passing source test or emission screening; or $\geq 2,000$ fpm		None
Row 2: Repairable Measurement	90-95% of the most recent passing source test or emission screening test, or $< 2,000$ fpm and $> 1,800$ fpm		Repair or replace, and re-measure within 3 calendar days of measurement
Row 3: Failing Measurement	$< 90\%$ of the most recent passing source test or emission screening test, or $< 1,800$ fpm		Immediately shut down any tanks controlled by the add-on air pollution control device that had a failing measurement

¹ If the measured slot velocity appears in multiple rows, the owner or operator shall implement the required action in the lower numbered row. For example the owner or operator would implement the required action in Row 2, if the measured slot velocity shows a repairable measurement (row 2) or a failing measurement (row 3).

Comparison values will change after each passing source test.

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Push Pressure - Measurements

(Only if you have a push system)

Required for each Tier II and Tier III tanks vented to APCD once **every 180 days**.

Prior to "initial source test", record measurements. NO COMPARISON VALUE at this point.


After "initial source test", use comparison values from source test results (See handout #11). 

Table 5: Add-on Air Pollution Control Device Parameter Monitoring

	Push Air Manifold Pressure (for push-pull systems only)	Required Action
Row 1: Acceptable Measurement	95-105% compared to the most recent passing source test or emission screening	None
Row 2: Repairable Measurement	90-95% or 105-110% of the most recent passing source test or emission screening test	Repair or replace, and re-measure within 3 calendar days of measurement
Row 3: Failing Measurement	> 110% or < 90% of the most recent passing source test or emission screening test	Immediately shut down any tanks controlled by the add-on air pollution control device that had a failing measurement

May record values directly from push pressure gauges.

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Smoke Tests



Required for Tier II and Tier III tanks vented to APCD once **every 180 days**.

(Due within 30 days after start-up of new/modified APCDs)



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Smoke Tests



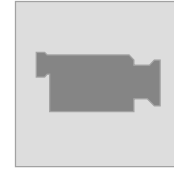
Test Methods

Add-on **Ventilated** APCD – Use Appendix 8 in Rule 1469

Add-on **Non-ventilated** APCD – Use Appendix 5 in Rule 1469

OR

Other method approved by South Coast AQMD



Take photos or record video of smoke tests.

If smoke test fails, **IMMEDIATELY SHUT DOWN** associated Tier II and Tier III tanks. Resume operation after acceptable smoke test conducted.



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Maintaining Equipment

Recordkeeping REQUIRED for all

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Every **180 Days**...

For all Tier Tanks vented to an APCD:

- Clean collection slots
- Clean push air manifolds (if push system present)

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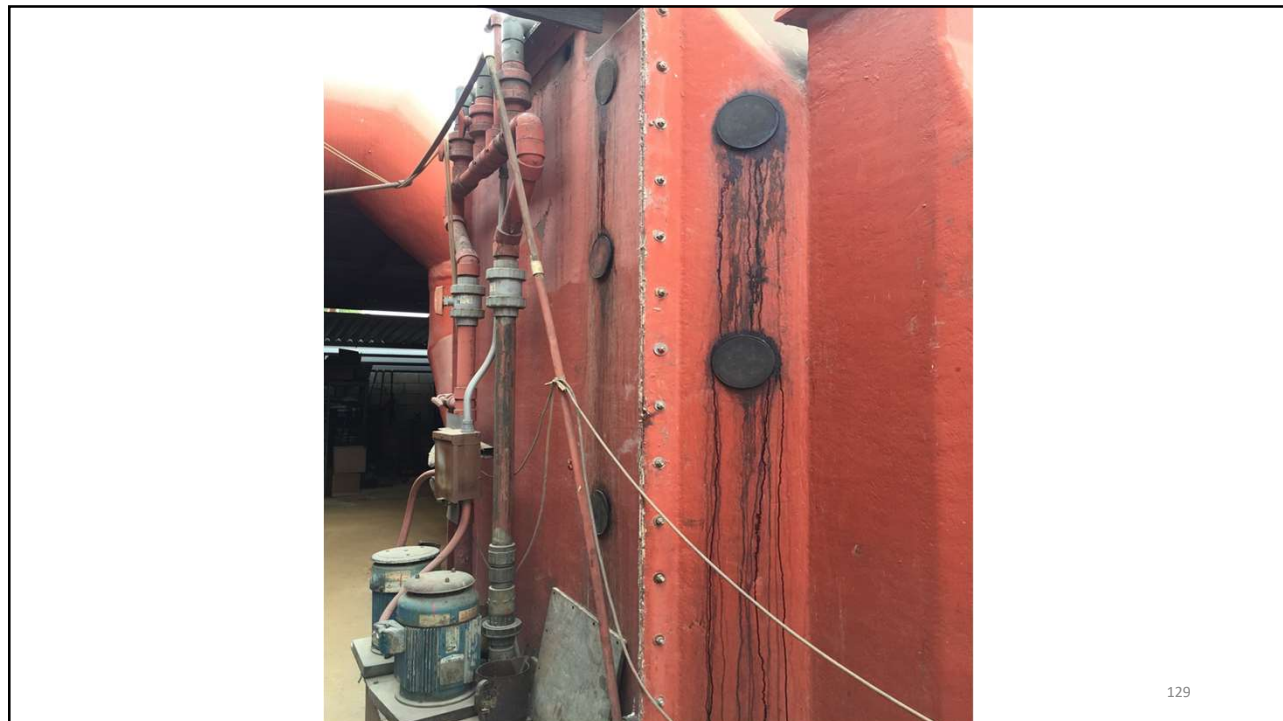
Every **Quarter**...

Conduct inspection & maintenance on APCDs
per Table 4-1
in Appendix 4 of Rule 1469 

(If your APCD is custom designed AND does not fall
under any options in Table 4-1, develop a maintenance
plan **APPROVED** by South Coast AQMD. Frequency will
be depend on this approved plan)

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Every **Week...**

- Visually inspect collection slots on all Tier Tanks
- Visually inspect push manifolds on all Tier Tanks
- Record & maintain differential pressure readings for APCD within allowable range (i.e. stage 1, stage 2, HEPA, etc)
- Record & maintain push pressure readings within allowable range
- Record & maintain air flow gauge readings within allowable range

Some permits may require DAILY readings!

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If APCD for chrome plating/anodizing tank is only a PACKED BED SCRUBBER (no HEPA, etc)...

Monitor and record:

inlet velocity pressure

AND

pressure drop across the system

each operating day

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Every **Operating Day**...

- Inspect & maintain mechanical fume suppressant coverage comparable to coverage during most recently approved source test on Tier II and Tier III tanks (*percentage of bath area covered*)
- Inspect & maintain foam blanket thickness across surface of the tank established during most recently approved source test on chromium electroplating or chromic acid anodizing tanks
 - **IF** foam thickness is found to NOT be maintained then:
 - Measure foam thickness **HOURLY for 15 consecutive days** then
 - Resume inspection once every operating day

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Additional Requirements in Table 4-1

See the table if you have a:

- Chromium tank cover
- Pitot tube



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Operation & Maintenance Plan (OMP)



Incorporates all inspection and maintenance requirements in **Appendix 4, THAT APPLIES TO YOUR FACILITY**. This includes maintenance plans for custom designed APCDs.

OMP shall include:

- Standardized checklists to document maintenance activities **AND**
- Procedures to follow to ensure proper operation of equipment

**SHOULD HAVE BEEN
AMENDED BY
JANUARY 31, 2019 TO
INCLUDE NEW RULE
REQUIREMENTS**

Any changes need to be added to the OMP. Keep older versions of the OMP for at least **5 years** after revisions.



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Notifications & Reporting

1-800-CUT-SMOG

Rule1469info@aqmd.gov

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Breach in Building Enclosure

(housing Tier II and Tier III tanks)



Repair breach in enclosure located **within 15 feet** of edge of Tier II or Tier III tank **within 72 hours of discovery**

May request extension to 72-hour time limit via 1-800-CUT-SMOG.

Request for extension beyond 72-hour limit may be approved if:

1. Requested prior to expiration of 72-hour time limit **AND**
2. Provides information to substantiate the following:
 - a. Repair or time needed to acquire material for repair will take longer than 72 hours **AND**
 - b. Temporary measures implemented to ensure no fugitive emissions result from breach

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Cutting of Roof Surfaces

(ANY roof on property)

PRIOR to cutting

Abate **hexavalent chromium** by:

- Cleaning surface areas with HEPA vacuum **AND**
- Notifying South Coast AQMD via 1-800-CUT-SMOG at least **48 hours prior** to cutting activities

DURING cutting


Minimize fugitive emissions by using methods such as a temporary enclosure and/or HEPA vacuum.



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Compliance Reports

- Initial Compliance Status Reports – submit upon **start-up** and include information in **Appendix 2**
- Ongoing Compliance Status and Emissions Reports – submit annually by **February 1** and include information from the previous calendar year (January 1-December 31). Information to be included is in **Appendix 3**. (See handout #3) 

**Reports can be submitted via email to:
Rule1469info@aqmd.gov**

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Incidents

Within **4 hours** of an incident, notify the South Coast AQMD by calling **1-800-CUT-SMOG** for the following:

- *Failed smoke test*
- *Failed source test*
- *Exceedance of permitted ampere-hour limit*
- *Malfunction of a non-resettable ampere-hour meter*

Provide the following information when notifying:

- Date and time of incident and when it was discovered
- Specific location and equipment involved
- Responsible party to contact
- Cause of incident
- Estimated time for repairs and correction

Within **7 calendar days** after incident is corrected (but **no later than 30 days** after incident occurred), submit a written report to South Coast AQMD.

- Report should include all sections of Rule 1469 (p)(4)(B) starting on page 41.

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Recordkeeping

(In addition to recordkeeping requirements in previous slides)

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Information Needed in Inspection Reports

(OMP inspections & Appendix 4 inspections)

- Device inspected
- Date and time of inspection
- Brief description of working condition of device during inspection
- Maintenance activities performed on APCD and associated equipment
- Actions taken to correct issues found during the inspection

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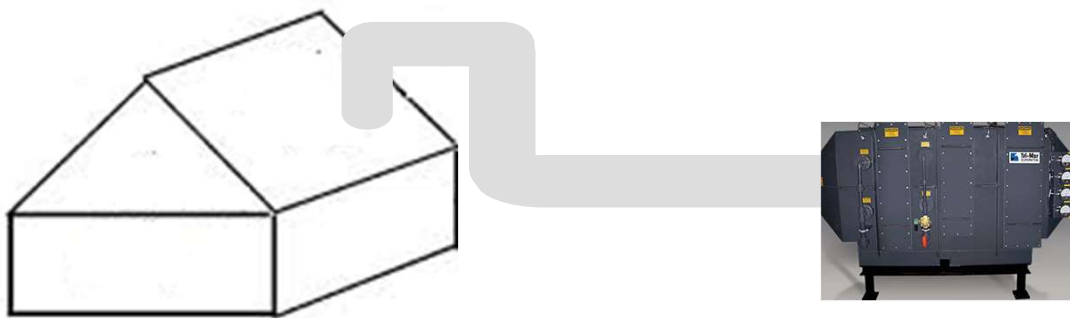
Additional Recordkeeping

- Waste Manifests (used filters, housekeeping waste, etc)
 - Filter purchase records
 - Safety Data Sheets (“SDS”)

Retain records for 5 years, with at least 2 years on site

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Permanent Total Enclosure

“PTE”

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You will be required to install a PTE if...

Source test fails more than once in
a 48-month period

OR

Do not shut down a Tier II or Tier III tank,
vented to an APCD **IMMEDIATELY** after
failing a smoke test, exceeding slot velocity
measurements, or exceeding push pressure
measurements:

- More than once in a 48-month period
AND is >1,000 feet from a sensitive
receptor **OR**
- Once for a facility \leq 1,000 feet from a
sensitive receptor

We will notify you. You can submit a response that will be reviewed prior to final decision.

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**Be aware of other
South Coast AQMD
rules that apply to
your facility.**

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