Proposed Rule 1480 – Air Toxic Metals Monitoring

WORKING GROUP MEETING #6

May 23, 2019

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Meeting Agenda

- Summary of Working Group Meeting #5
- Examples how South Coast AQMD Identified Sources
- Preliminary Draft Rule Provisions
- Preliminary Cost Considerations

Summary of Working Group Meeting #5

- Overview of Air Toxics Program (AB 2588) and Estimating Health Risk
- Recap of Proposed Rule 1480
- Proposed Monitoring Frequency
- Stakeholders Requested Additional Details for:
  - Clarification of process to identify sources of emissions
  - Threshold to initiate facility monitoring
  - Expansion of the notification procedures to facilities
- Preliminary Cost Information (ran out of time)
- Staff Responses since Working Group Meeting #4 (ran out of time)

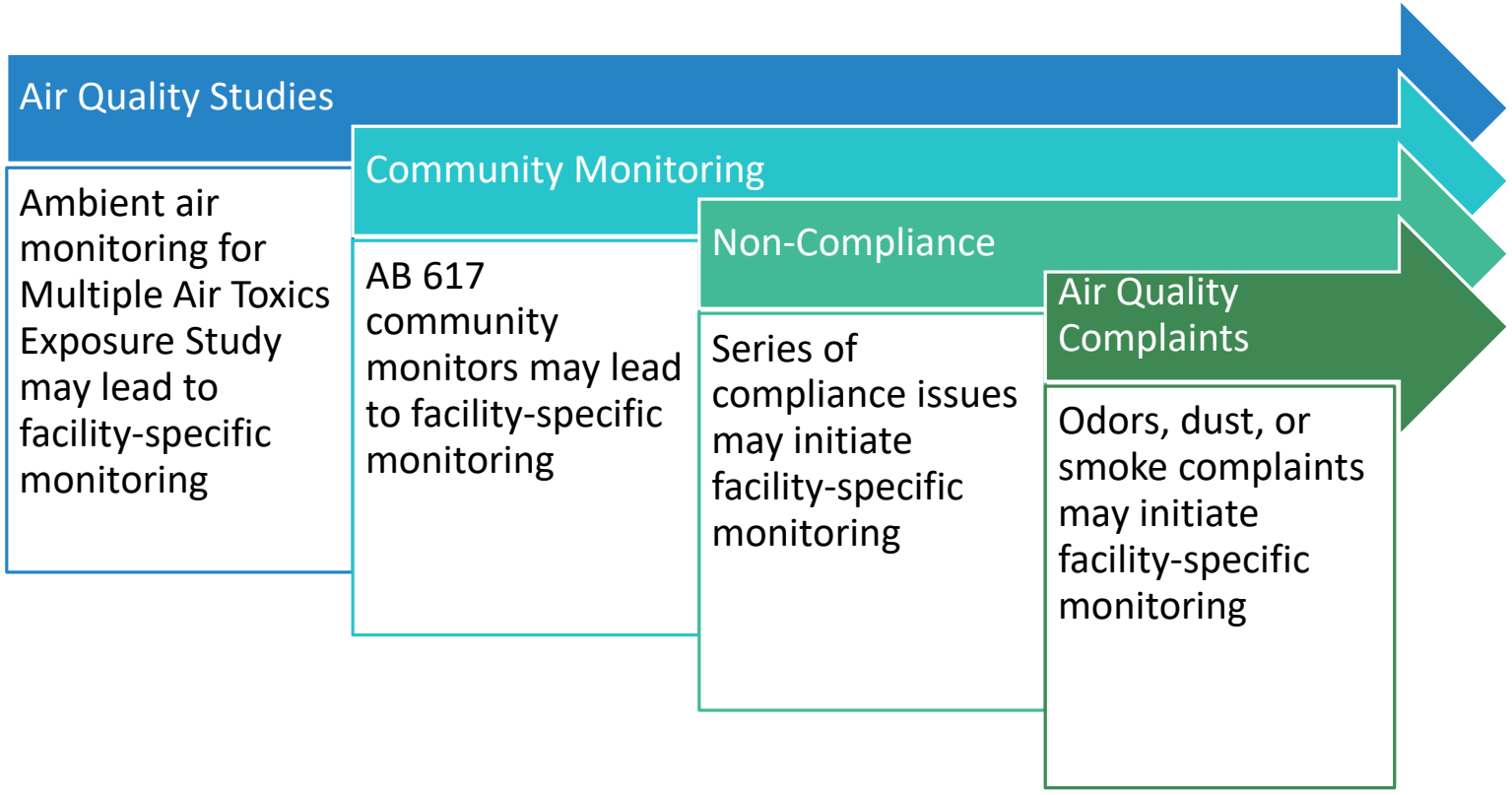
Examples How South Coast AQMD Identifies Sources

Background

- California Metals Coalition requested clarification on the South Coast AQMD process for identifying potential sources of air toxic metals
- Two examples of the process used to identify facilities where South Coast AQMD conducted ambient air monitoring
  - Paramount investigation
  - Riverside investigation

Possible Pathways South Coast AQMD May Initiate Facility-Specific Monitoring

- Variety of reasons why South Coast AQMD may initiate ambient air monitoring near a facility



General Process for Identifying a Facility that is Contributing to Ambient Levels

- South Coast AQMD staff has followed a general process to identify emissions that can be released to the ambient air
- Process generally begins after ambient monitoring or air quality information indicates that there may be a substantial source of emissions
- Process generally includes four main steps with elements within each of the steps
- Following slides provide an overview of the process and how previous air monitoring efforts near facilities fit within this process
- Staff will follow a similar process in identifying Potentially Significant Sources for Proposed Rule 1480

General Four-Step Process to Identify Facility Contributing to Ambient Levels

Step 1: Identify facility or facilities possibly contributing to air issue

Step 2: Within facility, identify the source or sources

Step 3: Determine if sources are capable of generating emissions

Step 4: Determine if emissions can be released to the ambient air

Step 1: Identify facility or facilities possibly contributing to air issue

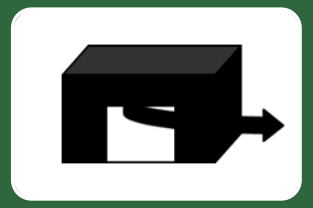
- Purpose of this step is to identify the facility or facilities that are contributing to specific air quality issue
- Air quality issue can be:
  - Ambient monitoring results within a general area that shows elevated levels of a specific air contaminant such as nickel, hexavalent chromium, and lead
  - Air quality complaints within a general area regarding odors or visible emissions such as smoke
- Tools used to identify facility or facilities that could potentially contribute to the air quality issue:
  - Placement of ambient monitors to better pinpoint location of facility or facilities
  - Facility inspections and site visits of facilities in surrounding areas to:
    - Identify any facilities that can potentially contribute to the air quality issue and
    - Eliminate facilities that are not conducting operations related to the air quality issue
  - Place glass plate samples that show a concentration gradient towards a facility

Step 2: Within facility, identify the source or sources

- After a facility or facilities are identified, the purpose of this step is to identify sources such as equipment, processes, and/or operations within the facility that could potentially contribute to the air quality issue
- Tools used to identify source or sources that could potentially contribute to the air quality issue:
  - More detailed facility inspection that includes but is not limited to inspection of permitted and unpermitted equipment or processes, inspection of pollution control equipment, observations of housekeeping practices, review of processes, operating and purchasing records, inspection reports, etc.
  - Location of equipment – inside or outside a building, if in a building proximity to an opening, cross-draft, vents, fans, etc.
  - Bulk samples in and around facility to identify if there is the presence of specific chemicals

Step 3: Determine if sources are capable of generating emissions

- The purpose of this step is to determine if source or sources identified are capable of generating emissions
- Tools used to determine if source or sources are capable of generating emissions that could potentially contribute to the air quality issue:
  - Emissions testing such as screening or source tests of source to quantify emissions
  - Measure specific parameters of pollution controls
    - Collection efficiency – using a hot-wired anemometer to measure the air flow toward the pollution controls
    - Smoke test to verify emissions are moving toward the pollution control and are not influenced by other factors such as a fan, cross-draft, etc.
    - Pressure differential across a filter to ensure there is no breach or clogging of the filter, or that the filter is properly situated
    - Verification of filters and bags that there are no leaks or breaches, and the proper filter media is being utilized



Step 4: Determine if emissions can be released to the ambient air

- Purpose of this step is to determine if emissions identified have the ability to be released to the ambient air
- Tools used to determine if emissions can be released to the ambient air include:
  - Is the source in the open with no pollution controls, no cover, and capable of generating fugitive emissions that could be released to the ambient air
  - If source is located within a building, are there openings where emissions can escape and be released to the ambient air such as
    - Vents
    - Doors and other openings where a cross-draft can allow emission to flow out of building
  - Placement of upwind and downwind ambient air monitors near facility to confirm ambient emissions

Example of 4-Step Process to Identify Two Facilities in Paramount

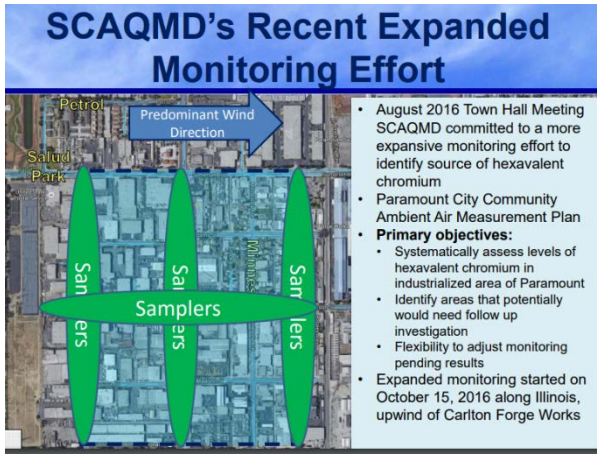
- October 2016, as part of its ongoing investigation to identify and address sources of hexavalent chromium emissions
  - South Coast AQMD deployed several monitors in the mostly industrial areas of the City of Paramount
  - Initial results showed elevated levels of hexavalent chromium emissions near Garfield and Minnesota
- In general, the process South Coast AQMD used and followed the 4-step process previously outlined
- Using this approach, two facilities were identified as the primary contributors to hexavalent chromium emissions
  - Anaplex Corporation (Anaplex) and
  - Aerocraft Heat Treating Inc. (Aerocraft)

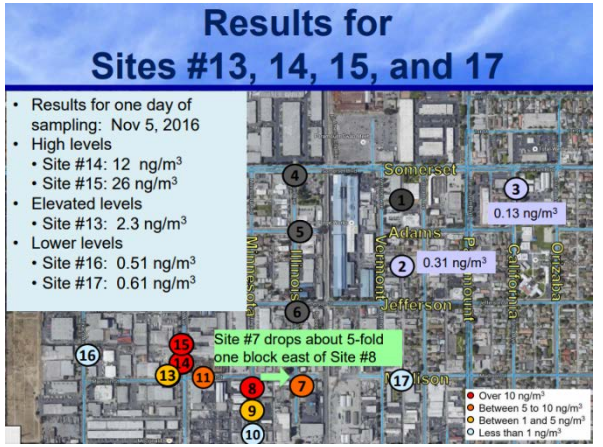
Example of 4-Step Process to Identify Two Facilities in Paramount *(Continued)*

- Anaplex is a metal processing company that conducts chromic acid anodizing, surface treatment, and spray coating operations
- Aerocraft is a heat treating company that conducts metal heat treating, cooling, cutting and grinding operations
- Information presented can be found on the South Coast AQMD website for the Paramount Emissions Investigation

Step 1: Identifying Anaplex and Aerocraft as Possible Facilities

- Process used to identify Anaplex and Aerocraft :
  - Additional ambient monitoring to better pinpoint general area of hexavalent chromium emissions
  - Conducted joint inspections with other agencies to identify facilities with operations that had the potential to generate hexavalent chromium
  - Anaplex and Aerocraft were identified as potential facilities based on the following operations that were capable of generating hexavalent chromium
    - Anaplex was conducting chromic acid anodizing, surface treatment, and spraying operations
    - Aerocraft was conducting metal heat treating of alloys with chromium, cooling and quenching operations, cutting and inspection operations





Step 2: Identifying Sources within Anaplex

- Conducted detailed inspections of operations at Anaplex and reviewed operating records and compliance reports
- Sources within Anaplex that could potentially contribute to elevated hexavalent chromium emissions:
  - Identified tanks that lacked a South Coast AQMD permit
  - Bulk samples from roof contained hexavalent chromium
  - Identified spraying of chromate based primers without adequate pollution controls
  - Found heated chromate and air sparged chromate tanks lacked required permits and pollution controls
  - No housekeeping plan to address fugitive emissions

Step 2: Identifying Sources within Aerocraft

- Conducted detailed inspections of operations at Aerocraft and reviewed operating records and compliance reports
- Sources within Aerocraft that could potentially contribute to elevated hexavalent chromium emissions:
  - Observed dusty conditions at the facility
  - Liquid and solid bulk samples in and around Aerocraft showed chromium in dust and liquid
  - Alloys containing chromium were heat treated in furnaces which can lead to oxidation of chromium to hexavalent chromium
  - Aerocraft used three methods of cooling for its heated treated metals: air, water, and oil quenching
    - Particulate was observed to be blown off the surface of the metal pieces that were air quenched
    - Hexavalent chromium was found in the water from large water quenching tanks that circulated through cooling towers that produced a mist
    - Visible emissions were observed as heated metal was immersed in oil quenching tank and combusts at the surface

Step 3: Determine if sources at Anaplex are capable of generating emissions

- Emission testing of three tanks showed elevated levels of hexavalent chromium
  - Heated sodium dichromate tank: 632,000 ng/m^3
  - Chemical film tank: 8,340 ng/m^3
  - Chromic acid anodizing tank: 6,880 ng/m^3
- Emission testing of three tanks showed high levels of hexavalent chromium

Step 3: Determine if sources at Aerocraft are capable of generating emissions

- Emission testing of three tanks showed elevated levels of hexavalent chromium
  - Fugitive emissions from water quench tank: 638 ng/m^3
  - Fugitive emissions from heat treating furnace: 376 ng/m^3
  - Fugitive emissions from oil quench tank 130 ng/m^3

Step 4: Determine if Anaplex emissions can be released to the ambient air

- Findings showed tanks with hexavalent chromium emissions had the ability to be released to the ambient air
  - Bay doors were open on opposite ends of the building allowing for a cross-draft through the facility where tanks were operated allowing emissions to flow out of the building
  - Vents and fans were pulling air out of the building
  - Steam from heated sodium dichromate seal tank could be seen leaving the building through a vent directly above the tank

Step 4: Determine if Aerocraft emissions can be released to the ambient air

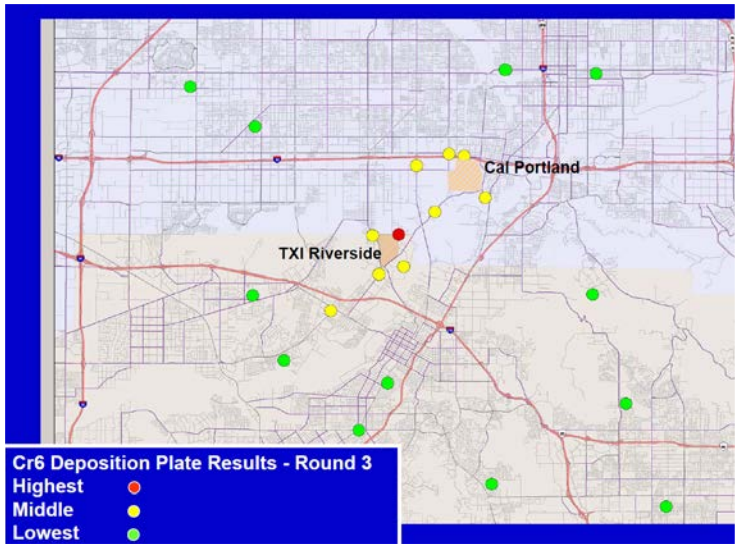
- Findings showed tanks with hexavalent chromium emissions had the ability to be released to the ambient air
  - Building was very open which allowed fugitive emissions to escape
  - Cooling tower created a mist of water where the water circulated through the water quench tank that contained hexavalent chromium
  - Building had ridge-line vents that ran the length of the building
  - Air cooling occurred in the open air
  - Configuration of buildings created a wind tunnel to carry emissions outside of the building

Reductions at Anaplex and Aerocraft

- Both Anaplex and Aerocraft were identified as Potentially High Risk Level Facilities and required to prepare and implement:
  - An Early Action Risk Reduction Plan
  - Health Risk Assessment
  - Risk Reduction Plan
- Ambient monitoring lead the South Coast AQMD to identify sources of hexavalent chromium that were not regulated
  - Heated sodium dichromate tank
  - Heat treating of alloys containing chromium
- South Coast AQMD amended Rule 1469 to address heated sodium dichromate seal tanks and is working on a Proposed Rule 1435 to address hexavalent chromium emissions from heat treating
- Both facilities have installed additional air pollution controls and made other process and operational changes to reduce hexavalent chromium emissions

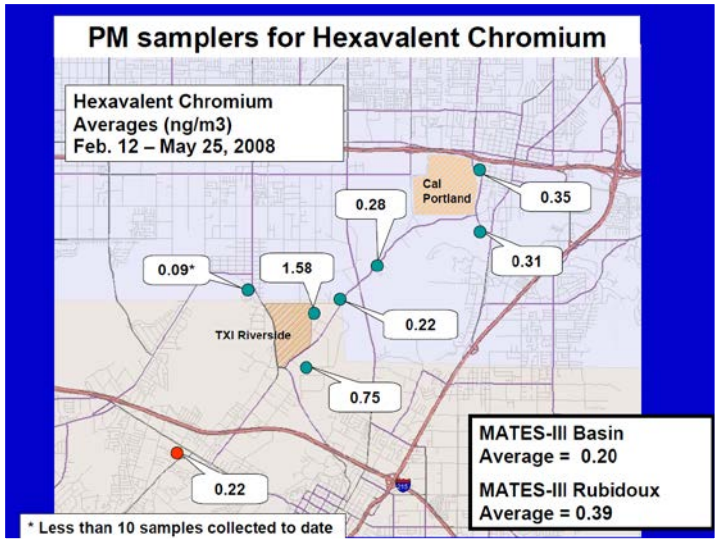
Example of 4-Step Process to Identify a Facility in Riverside

- During the MATES III study, Rubidoux monitor showed elevated levels of hexavalent chromium emissions almost twice basin average
- In general, the process South Coast AQMD used and followed the 4-step process previously outlined
- Using this approach, TXI was identified as the primary contributor to hexavalent chromium emissions
- Information presented can be found on the South Coast AQMD website for the Riverside Investigation



Step 1: Identifying TXI and Cal Portland as Possible Facilities

- Process used to identify TXI and Cal Portland:
  - Examined permit records and survey of area that showed no major hexavalent chromium sources
  - Deployed glass plates in the area downwind of MATES monitor
  - Located ambient monitors in areas with glass plates with highest concentrations
  - Conducted inspections to identify facilities with operations that had the potential to generate hexavalent chromium
  - TXI and Cal Portland manufacture Portland cement by:
    - Acquiring raw materials
    - Preparing raw materials into raw mix
    - Processing of raw mix to make clinker
    - Grinding and milling of clinker into cement



Step 2: Identifying Sources within TXI and Cal Portland

- Conducted detailed inspections, emission tests and collected bulk samples at TXI and CPC
- Sources within TXI or CPC that could potentially contribute to hexavalent chromium emissions:
  - Kiln stack
  - Finished product
  - Clinker storage piles
  - Bag-house fall-out
  - Raw materials

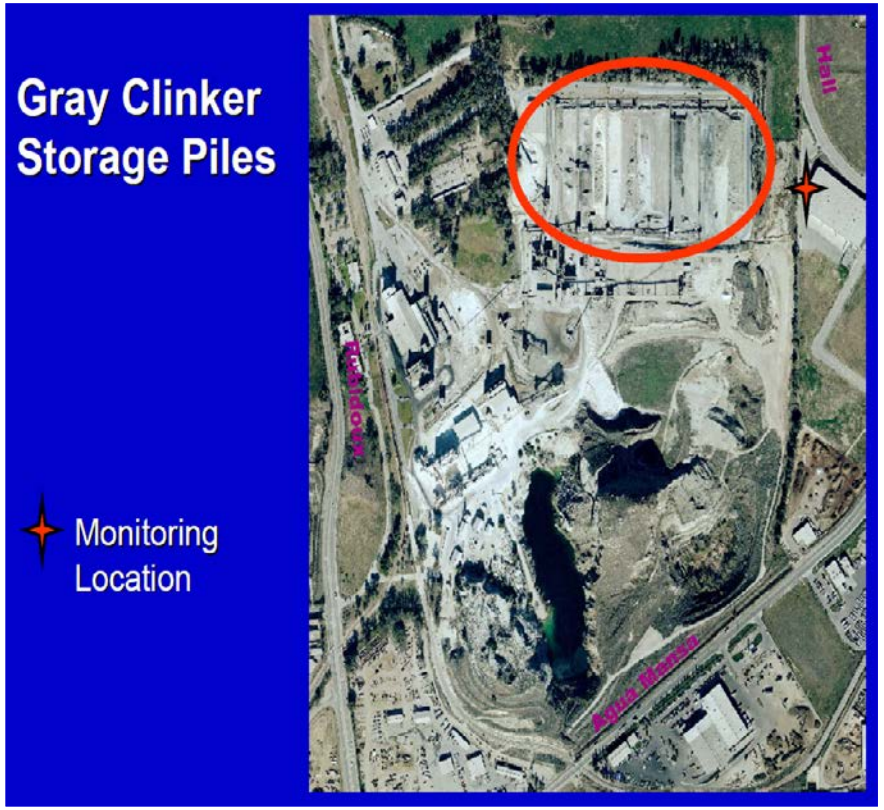
Step 3: Determine if sources at TXI are capable of generating emissions

- Initially, collected samples at sources did not correlate with higher readings at monitors
- Staff further separated fine dust material from bulk samples using a sieve
  - Fine dust showed a higher hexavalent chromium concentration
  - Fine dust results were within the range of model predictions at the monitors
- Microscopy and x-ray diffraction structurally verified that the fine dust particles were being deposited near TXI

TXI Riverside	Bulk samples	Sieved Samples (<44 µm)
	Cr+6	Cr+6
Location	(ppb)	(ppb)
Bay A surface	500	
Bay A sub-surface	750	3980
Bay B surface	800	3350
Bay B sub-surface	870	
Bay H surface	1320	6830
Bay H sub-surface	2030	
Bay I surface	1140	2070
Bay I sub-surface	1120	
Bay J surface	1670	15000
Bay J sub-surface	1740	

Step 4: Determine if TXI emissions can be released to the ambient air

- Findings showed clinker stock piles located at TXI had the ability to release hexavalent chromium emissions into the ambient air
  - Fine dust is more likely to become airborne and blown offsite
  - TXI clinker stock pile were uncovered and located near an ambient monitor
  - CPC were less than TXI due to:
    - Better dust control
    - Indoor storage of clinker
    - Longer distance between emission points and the fenceline
    - Hexavalent chromium content of clinker was 20% lower than TXI



Reductions at TXI Riverside Cement

- As part of the settlement to Notice of Violations issued by South Coast AQMD, TXI:
  - Removed all clinker piles from the open storage areas
  - Prohibited from open storing and handling clinker
  - Required to handle clinker in an enclosed setting
- Investigation lead to the South Coast AQMD to identify dust from clinker material to be the main contributor to ambient hexavalent chromium levels
- South Coast AQMD amended Rule 1156 in 2009 to address storage and handling of clinker material
- TXI discontinued operation in December 2015

Identification Process for PR 1480

- Both the Paramount and Riverside investigations were initiated by elevated levels of hexavalent chromium detected by ambient air monitoring
- South Coast AQMD staff undertook an extensive process to identify the source of the elevated levels generally following the 4-step process
- Staff will use a process similar to the 4-step process when identifying Potentially Significant Sources for PR1480

Preliminary Draft Rule Provisions

Preliminary Draft Rule Language

- Preliminary Draft Rule is based on
  - Concepts presented at previous working group meetings
  - Initial stakeholder comments
- Additional iterations of draft rule language
- Staff is seeking stakeholder feedback throughout the rule making process

Proposed Rule 1480 Structure

a) Purpose
b) Applicability
c) Definitions
d) Designation of a Potentially Significant Source
e) Air Toxic Metals Monitoring and Sampling Plan
f) Air Toxic Metals Monitoring and Sampling Requirements
g) Monitoring and Sampling Option
h) Monitoring, Reporting, and Recordkeeping Requirements
i) Posting Results
j) Process to Discontinue Air Toxics Metals Monitoring and Sampling

(a) Purpose

- Require facilities designated by the Executive Officer as a Potentially Significant Source to conduct ambient monitoring
- Designating a facility as a Potentially Significant Source will follow specific process in specified in subdivision (d)
- Potentially Significant source is a facility that has the potential to exceed a cancer risk of 100 in one million at a sensitive receptor

(b) Applicability

- Applies to any facility that receives a Notice of Findings from the Executive Officer
  - Facility that exceed cancer risk of 100 in one million at the nearest sensitive receptor
  - Based on information such as, ambient monitoring data, source test data, facility records, and investigation of surrounding area
- Applies to the following toxic metals: Arsenic (As), Cadmium (Cd), Copper (Cu), Hexavalent Chromium (CrVI), Nickel (Ni), Manganese (Mn)

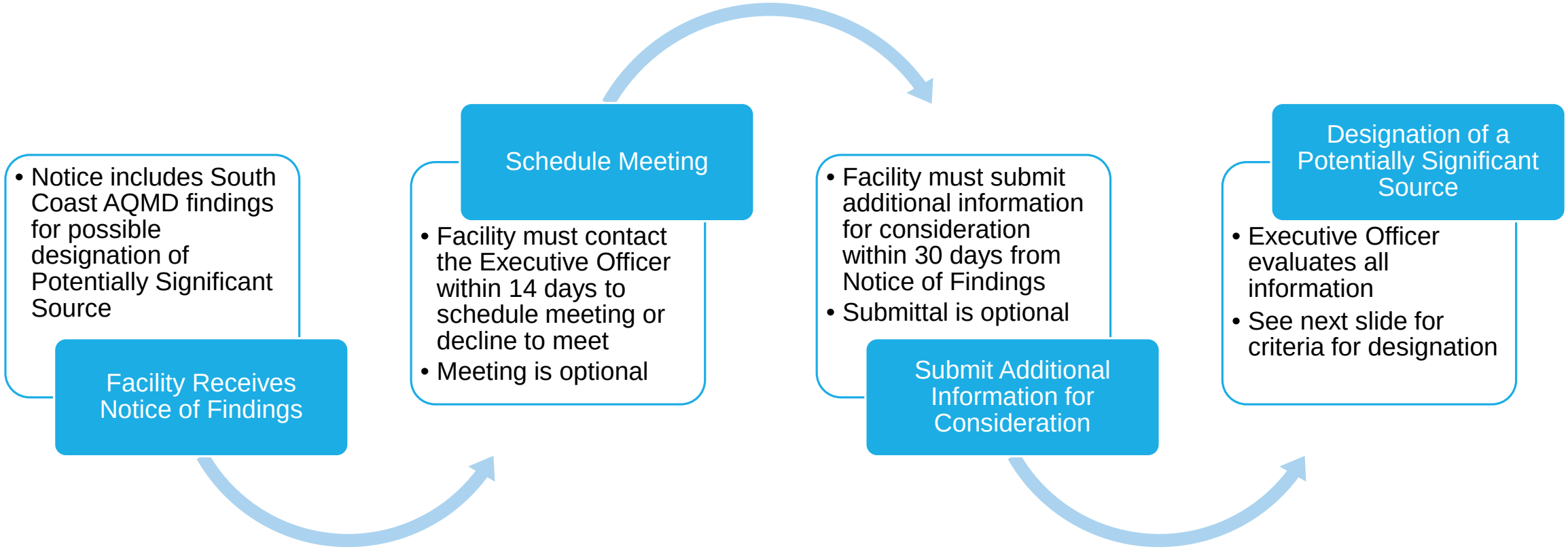
(c) Key Definitions

- Definitions provide additional clarity to provisions
- Subdivision (c) includes the following definitions
  - Air Toxics Metals Monitoring
  - Emissions Related Violation
  - Maximum Individual Cancer Risk (MICR)
  - Notice of Finding
  - Potentially Significant Source
  - Toxic Metal
  - Valid 24-hour Sample

(d) Designation of a Potentially Significant Source

- Facility receives Notice of Findings from Executive Officer that the facility may be a Potentially Significant Source
  - Estimated cancer risk for any sensitive or residential receptor is greater than 100 in-one-million
- Facility electing to meet Executive Officer has 14 days from date of Notice of Findings to schedule meeting
- Facility electing to provide information shall provide the information to the Executive Officer within 30 days of Notice of Findings
- Request for an additional 30 days to provide information to substantiate why a facility should not be designated as a Potentially Significant Source is allowed
- Approval for 30 day extension is based on
  - Request is made before 30 days of the Notice of Findings
  - Need for extension is to complete collection of additional data such as emissions testing, laboratory analysis, etc.
  - Collection of additional data must have been initiated before the request for the 30-day extension

Approach for Designating a Facility as a Potentially Significant Source



Criteria for Designating a Potentially Significant Source

- Findings that facility is contributing to ambient concentrations of specified pollutant based on all available information that includes but is not limited to:
  - Observations and findings to identify the facility such as but limited to site visit at the facility, operating practices, housekeeping practices, and investigation of surrounding sources
  - Review of data and reports such as but not limited to equipment and pollution controls, South Coast AQMD permits, compliance data, monitoring and recordkeeping, safety data sheets, orders, invoices, process and operational data, etc.
  - Emissions data to demonstrate source is capable generating emissions such as ambient air quality data, emissions data, bulk samples in and around the facility, etc.
  - Operation of pollution controls such as collection efficiency, inspection of filters and bags, pressure across filters, etc.
  - Findings regarding the ability for emissions to become ambient – is the source located outdoors, proximity of the source to an opening of a building, etc.
  - Information provided by the facility

Designating Facility as a Potentially Significant Source

- If the Executive Officer designates facility as a potentially significant source, facility must
  - Submit an Air Toxics Metals Monitoring and Sampling Plan
  - Will be a Potentially High Risk Level Facility under Rule 1402
  - Will be subject to the ambient monitoring requirements

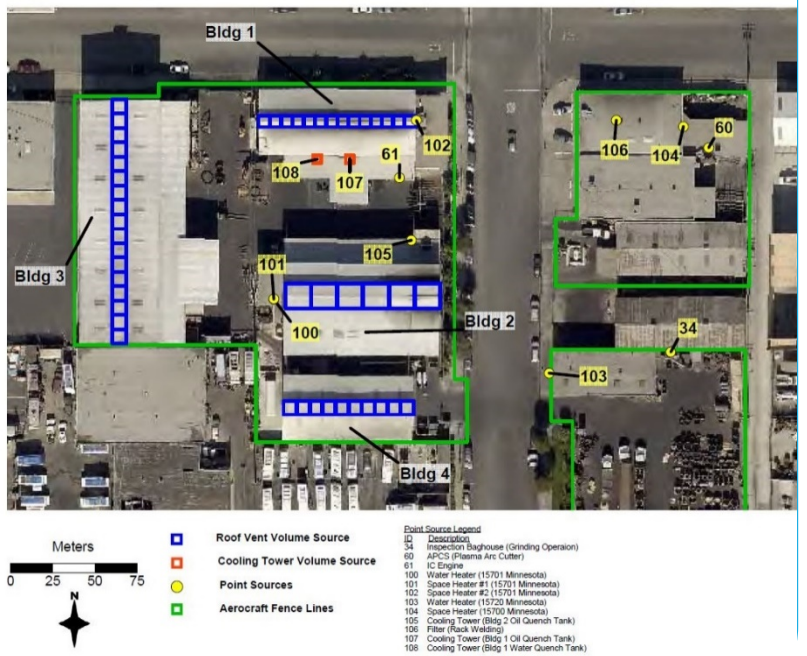
(e) Air Toxics Metals Monitoring and Sampling Plan – Plan Submittal

- Purpose of the Monitoring and Sampling Plan is to gather information to identify additional or change the location of ambient monitors
- Within 90 days of being designated as a Potentially Significant Source, facility must submit a Monitoring and Sampling Plan for review and approval
- Approval of the Monitoring and Sampling Plan is based on the completeness of the information required
  - If the Monitoring and Sampling Plan is rejected, the facility must resubmit the Plan within 30 days
- A Monitoring and Sampling Plan may not be needed if the South Coast AQMD has collected sufficient information through the designation process to appropriately site monitors
  - The letter designating facility as a Potentially Significant Source will state if the facility is exempt from submitting a Monitoring and Sampling Plan

Facility Information for Monitoring and Sampling Plan

Required facility information:

- List of all toxic metals generated or processed with operating schedule
- Facility map that identifies the following:
  - Toxic emission sources
  - Air pollution control devices and stacks
  - Building enclosures and openings
  - Storage areas with toxic metals
  - Vehicle ingress and egress points
  - Property line and fence line
  - Publically accessible areas
  - Sensitive receptor locations



(f) Air Toxics Metals Monitoring and Sampling Requirements

- Owner or operator is required to start ambient monitoring
  - 90 days after approval of a Monitoring and Sampling Plan, if a Monitoring and Sampling Plan is required; or
  - 90 days after being Designated as a Potentially Significant Source, if the facility was not required to submit a Monitoring and Sampling
- Must collect one valid 24-hr midnight-to-midnight sample at each location at least once every three day frequency (1 in 3 day) for the metal toxic air contaminants specified in the Designation Letter
- One time request for 1 in 6 day may be requested by facility if:
  - Rolling 30-day average MICR < 25 in-one-million for past 6 months at any sensitive receptor; and
  - Facility completed Early Action Reduction Plan under Rule 1402
- Facility required to return to 1 in 3 day sampling schedule if:
  - Rolling 30-day average MICR ≥ 25 in one million;
  - Facility receives a Notice of Violation for an emission related violation;
  - Facility required to submit an updated or modified Risk Reduction Plan under Rule 1402

Additional Monitoring and Sampling Requirements

Requirements for Missed Sample

- Telephone notification required within 2-hr of discovery
- May not miss more than one sample over 30-day consecutive period

Weather Station

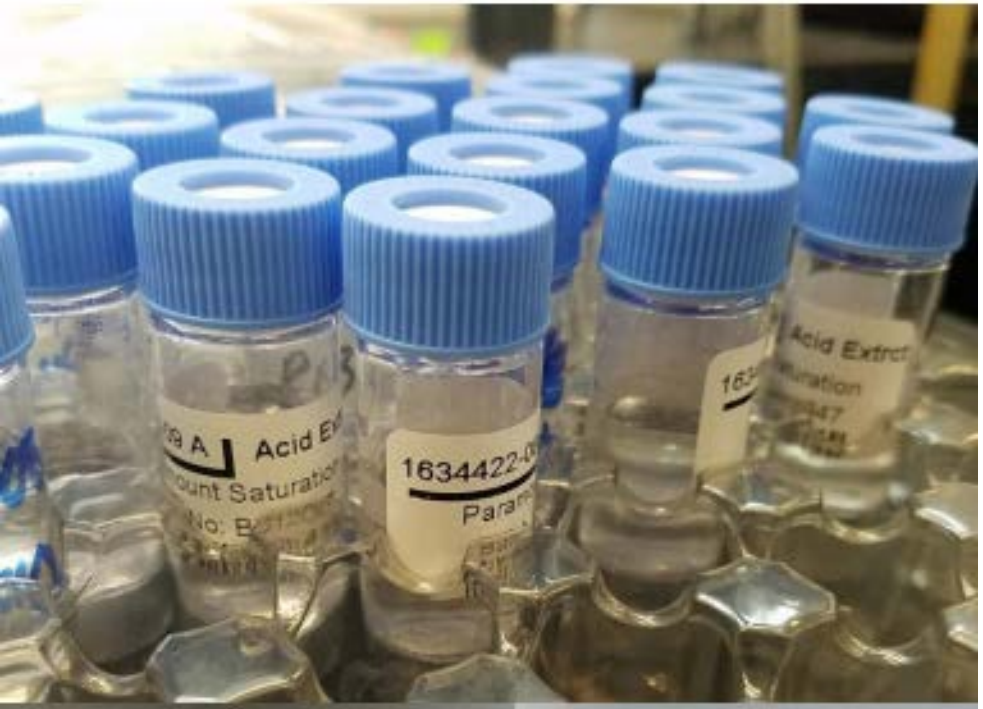
- Continuously record wind speed and direction

Training and Certification

- Provisions to train and certify facility operators to collect samples

Samples

- Retained for one year
- Must be provided to Executive Officer upon request



Sampling and Analysis

- Operator must submit samples collected to a laboratory approved under the South Coast AQMD Laboratory Approval Program
- Sampling and collection methods shall follow:
  - ASTM D7614 for hexavalent chromium;
  - Title 40 CFR 50 Appendix B and U.S. EPA Method IO-3.5 for non hexavalent chromium metals;
  - Other method preapproved by Executive Officer

(g) Monitoring and Sampling Option

- Facility may either conduct or elect to have South Coast AQMD conduct ambient air monitoring
- Key requirements:
  - Pay fee for South Coast AQMD to conduct monitoring and sampling
  - Provide access to facility
- Discussion of fee will be at next Working Group Meeting

(h) Monitoring, Recordkeeping, and Reporting Requirements

- Unless required under another South Coast AQMD rule, operator must maintain records of:
  - Weekly record of housekeeping activities;
  - Weekly records of maintenance activities on any air pollution control equipment;
  - Daily records of the type and amount of metals used in any emission generating operations; and
  - Daily records of wind speed and direction

(i) Posting Results

- Require facilities to post results of ambient air monitoring to a publicly available website within 7 business days of retrieving the sample
- South Coast AQMD will post results for facilities that elect to use the Monitoring and Sampling Option
  - Fee will reflect resources to post results

(j) Process to Discontinue Ambient Air Monitoring

- Operator must submit a written request to cease monitoring
- Request must include:
  - Facility information
  - Confirmation Rule 1402 Risk Reduction Plan is fully implemented
  - Demonstration through monitored data and air dispersion modeling that the MICR at all sensitive receptors are below 10 in-one-million based on the past 180 days of monitored data
- Executive Officer will approve request if:
  - Approved Rule 1402 Risk Reduction Plan is fully implemented
  - MICR associated with the facility operations at all sensitive receptors are below 10 in-one-million for 180 days

Preliminary Cost Considerations for Proposed Rule 1480

Background on Cost Considerations

- Costs are generally separated in two categories to determine overall compliance cost of a proposed rule
  - One Time Cost
  - Recurring Cost

One Time Cost

- Air Monitoring Plan
- Equipment cost
- Installation cost
- Other

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Recurring Cost

- Maintenance cost (e.g., filter media)
- Operational cost (e.g. energy and labor)

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Compliance Cost

Initial Cost Considerations for Proposed Rule 1480

- Staff has started to investigate cost based on initial air monitoring concepts presented in previous Working Group Meeting
- Initial cost considerations for one time and recurring cost included

One Time Cost

- Air Monitoring Plan preparation
- South Coast AQMD review of plan
- Ambient air monitors
- Auxiliary equipment
- Other

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Recurring Cost

- Monitor maintenance
- Sample collection
- Sample analysis
- Filter media
- Energy
- Labor
- Other

Preliminary Cost Considerations – One Time Costs

- Sampling and Monitoring Plan
  - Plan preparation ~$8,500
  - South Coast AQMD review (20 to 50 hours) ~$155 per hour
- Ambient Air Monitors
  - Range from ~ $4,800 to $24,000
  - Costs specific to model and capability
- Wind monitor: $4,000 (equipment and installation)

Types of Air Monitors Used by South Coast AQMD

Type	Cost	Filter Media	Mount Option	Pollutant Analyzed	Power Source	Flow Rate	Key Characteristics
BGI OMNI	~$4,800	• Teflon • Cellulose	• Stand • Pole	• Multi-metal • Cr^{+6}	• AC, DC and solar • Recharge if pole mounted	• Set at 5 L/minute (Not Adjustable)	• Portable • Suitable for fence-line monitoring • 1 Filter • Retrieve entire unit for analysis • Used in Paramount and Compton
BGI PQ100	~$6,700	• Teflon • Cellulose	• Tripod • Stand	• Multi-metal • Cr^{+6}	• AC, DC and solar	• 2 L/minute - 25 L/minute • Typically set at 12 L/minute	• Portable • 1 filter • Used in Compton and at Newport Beach
Xonteck 924	~$24,000	• Quartz	• Stands	• Multi-metal • Cr^{+6}	• AC	• 0 – 30 L/minute • Typically set at 12 L/minute	• Permanent (heavy) • 4 filters (sequential or parallel) • Monitor multiple compounds simultaneously • Used at cement facilities and for NATTS
Tisch HiVol	~$7,000	• Glass Fiber	• Stand	• Metal-metal	• AC	• 1100-1700 L/minute	• Permanent (heavy) • Hi-Volume • 1 filter • Used for Rules 1402, .1 and .2

Preliminary Cost Considerations – Recurring Costs

Sample analysis cost

- Filters: $40-$90 per pack
- Sample collection and transport: 5 hours @ $80/hr = $400
- Lab analysis: $75-$150 per sample
- Expedited sample analysis: additional $350-$550 per sample depending on situation
- Maintenance and calibration of sampler: $1,920 per year
- Annual audit of sampler and wind system: $2,000 per year

Preliminary Cost Considerations – Recurring Costs (continued)

- Annual sample collection and setup per year: ~$13,400
  - Cost is per monitor
  - Based on a 1 in 3 day sampling schedule
  - Includes sample collection and setup, preventative maintenance, travel, flow checks, annual audit, and annual third party audit
- Sampling analysis cost
  - Hexavalent chromium cost/filter: ~$840
  - Multi-metal cost/filter: ~$120

Variables to Consider for Cost

- Ambient air monitoring costs could vary by facility
- Factors that could affect costs include:
  - Air Monitoring Plan
  - Type of monitors
  - Number of monitors
  - Number of samples analyzed
  - Other (e.g., ancillary equipment and labor)
- Staff will continue to refine cost information throughout the rule development process

Next Steps

- 7th Working Group Meeting: June 2019
- Governing Board Meeting: 3rd quarter of 2019

PR 1480 Staff Contacts

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