Proposed Rule 1480 – Air Toxic Metals Monitoring

WORKING GROUP MEETING #5

April 10, 2019

Meeting Agenda

- Summary of Working Group Meeting #4
- Overview of Air Toxics Program (AB 2588) and Estimating Health Risk
- Recap of Proposed Rule 1480
- Proposed Monitoring Frequency
- Preliminary Cost Considerations
  - Equipment, Installation, Operation and Maintenance
- Staff Response to Comments

Summary of Working Group Meeting #4

- Provided overview of Rule 1402 Potentially High Risk Level Facilities
- Recap of PR 1480 concepts
- PR 1480 framework presented
- Stakeholders requested additional details for:
  - Air Toxics Program (AB 2588) and Rule 1402
  - Estimating health risks
  - Air monitoring costs

Overview of Air Toxics Program (AB 2588) and Estimating Health Risk

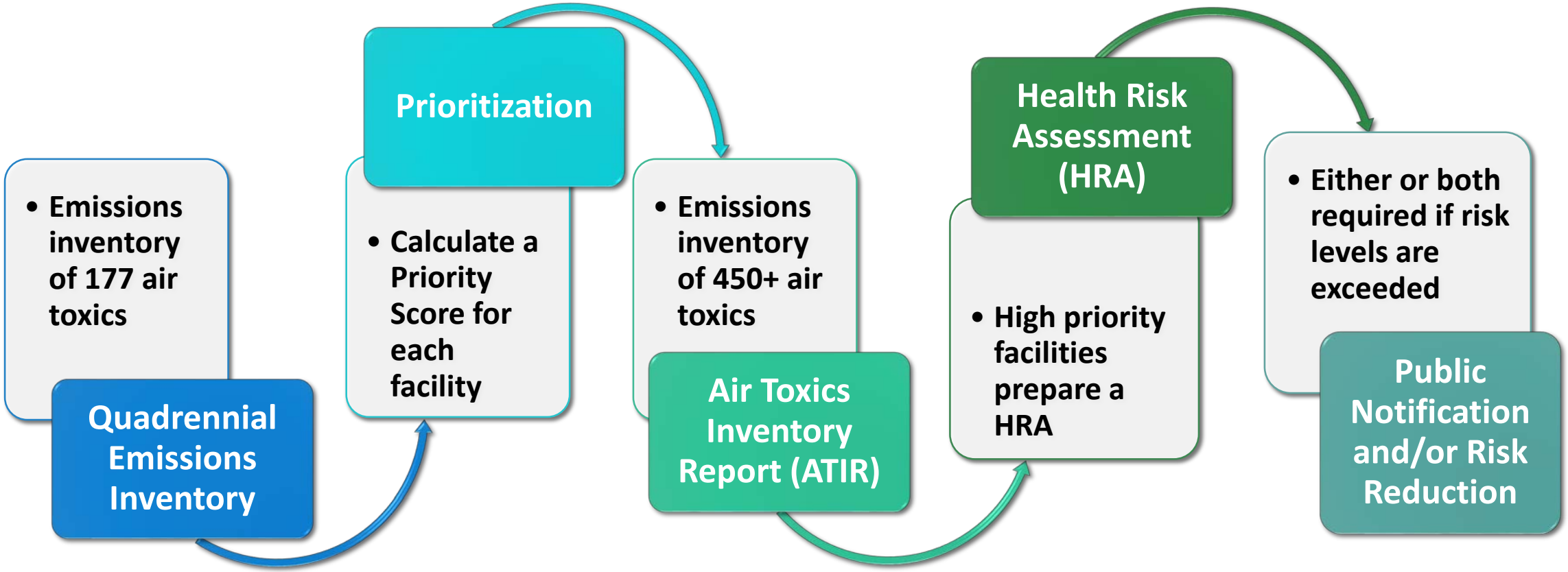
AB 2588 Background

- State law was enacted in 1987 (Connelly)
- Public right-to-know program
- Requires stationary sources to report the types and quantities of certain substances routinely released into the air
- Implemented through Rule 1402

AB 2588 Facility Categories

- Core Facilities
  - Report site-specific inventories of their Toxic Air Contaminants (TACs) every 4 years
  - 470 facilities
- Industry-wide Survey Facilities
  - Smaller facilities that share same SIC Code which SCAQMD prepares inventory and risk assessment
  - Examples include metal plating and finishing facilities, retail gas stations, dry cleaners, auto body shops

General AB 2588 Process for 'Core' Facilities



Three Key Components Describing Health Risk

Cancer Risk

- Estimates the probability of cancer cases
- Expressed in “chances in a million”

Non-Cancer Risk

- Estimates non-cancer health effects
- Acute non-cancer effects are from short-term exposure
- Chronic non-cancer effects are from long-term exposure
- Expressed using a Hazard Index (HI)

Cancer Burden

- Estimates the increase in the occurrence of cancer cases in a population subject to a cancer risk of 1 in a million or greater
- Cancer burden > 0.5 requires risk reduction

Rule 1402 Health Risk Thresholds

Cancer Risk Thresholds	Significant Risk	Cancer Risk > 100 in one million
	Risk Reduction	Cancer Risk > 25 in one million
	Public Notification	Cancer Risk > 10 in one million
Non-Cancer Risk Thresholds	Significant Risk	Non-Cancer HI > 5
	Risk Reduction	Non-Cancer HI > 3
	Public Notification	Non-Cancer HI > 1
Cancer Burden Threshold	Risk Reduction	Cancer Burden > 0.5

About Health Risk Assessments

Estimates chance that a person may experience a health effect from exposure to toxic air contaminant emissions

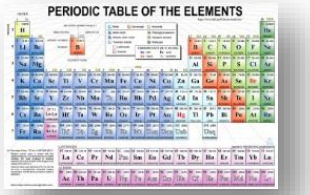
Snapshot can change if toxic air contaminant emissions are reduced

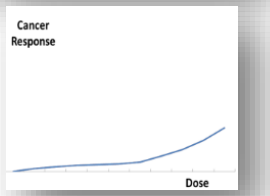
"Snapshot" based on toxic air contaminant emissions from one year of operation

Assumes base year emission levels for 30 years

Conservative assumptions - people are outdoors 24 hours, 7 days a week in one location

Health Risk Assessment Process





Hazard Identification

Identifies health problems and potency of toxic air contaminants

Dose-Response

- Accounts for the increased chances of having health effects when pollutant levels are higher.
- Expressed in Cancer Potency Factor

Exposure

- Estimates the amount of time a person could be exposed to toxic air contaminants
- Residential exposure is 30 years and off-site worker exposure is 25 years

Sensitivity

Accounts for children being more sensitive to the health effects of air toxics

Health Risk Assessment

Potential Health Risk Estimate[1]

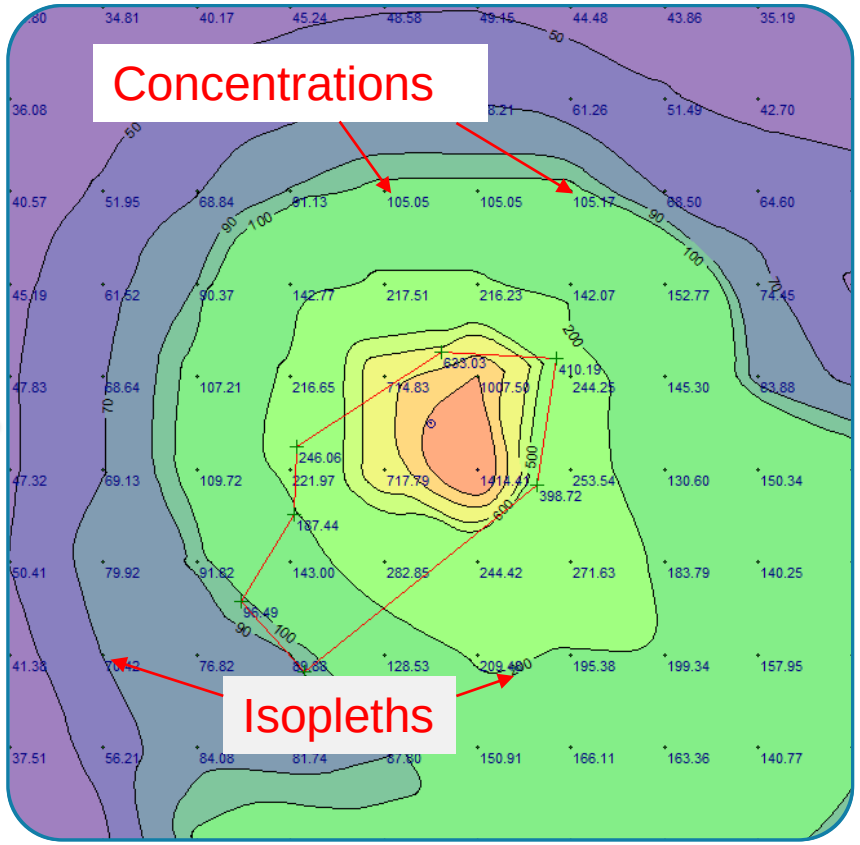
[1] Uses methodology established by the California Office of Environmental Health Hazard Assessment

Air Dispersion Modeling

Inputs:

- Emission rates
- Emission source types (point, volume, area)
- Release parameters
- Meteorological data
- Terrain type
- Receptor locations

Model (AERMOD)



How to Estimate Cancer Risk

Different Exposure Types

- 30-yr for residential receptors
- 25-yr for worker receptors

Cancer risk is calculated for each pathway (e.g. inhalation, dermal contact, soil contact) using:

Cancer Risk = Toxicity x Dose (adjusted)

- Toxicity is based on
  - Cancer Potency Factors from OEHHA
- Dose is calculated from:
  - Ground-level concentrations at receptors
  - Exposures (varying)
  - Ages (varying)

Total cancer risk = cancer risks from all pathways summed for each scenario

Potentially High Risk Level Facilities

What is a Potentially High Risk Level Facility

- Facilities that have the potential to exceed or has exceeded the Significant Risk Level (Cancer Risk > 100 in one million)
- Determination based on emissions data, source test, or ambient monitoring data
  - Findings from evaluation of emissions and compliance data
  - Findings from facility site visits
  - Findings from investigation of surrounding sources

Addresses High Health Risks Early

- Submittal and implementation of Early Action Reduction Plan

Expedited Implementation

- Submit
  - Air Toxics Inventory Report,
  - Health Risk Assessment and
  - Risk Reduction Plan

Better Overall Public Health Sooner

- Completes overall risk reduction sooner than traditional AB 2588 Program

Recap of Proposed Rule 1480

Overview of PR 1480

Recap of PR 1480 Framework

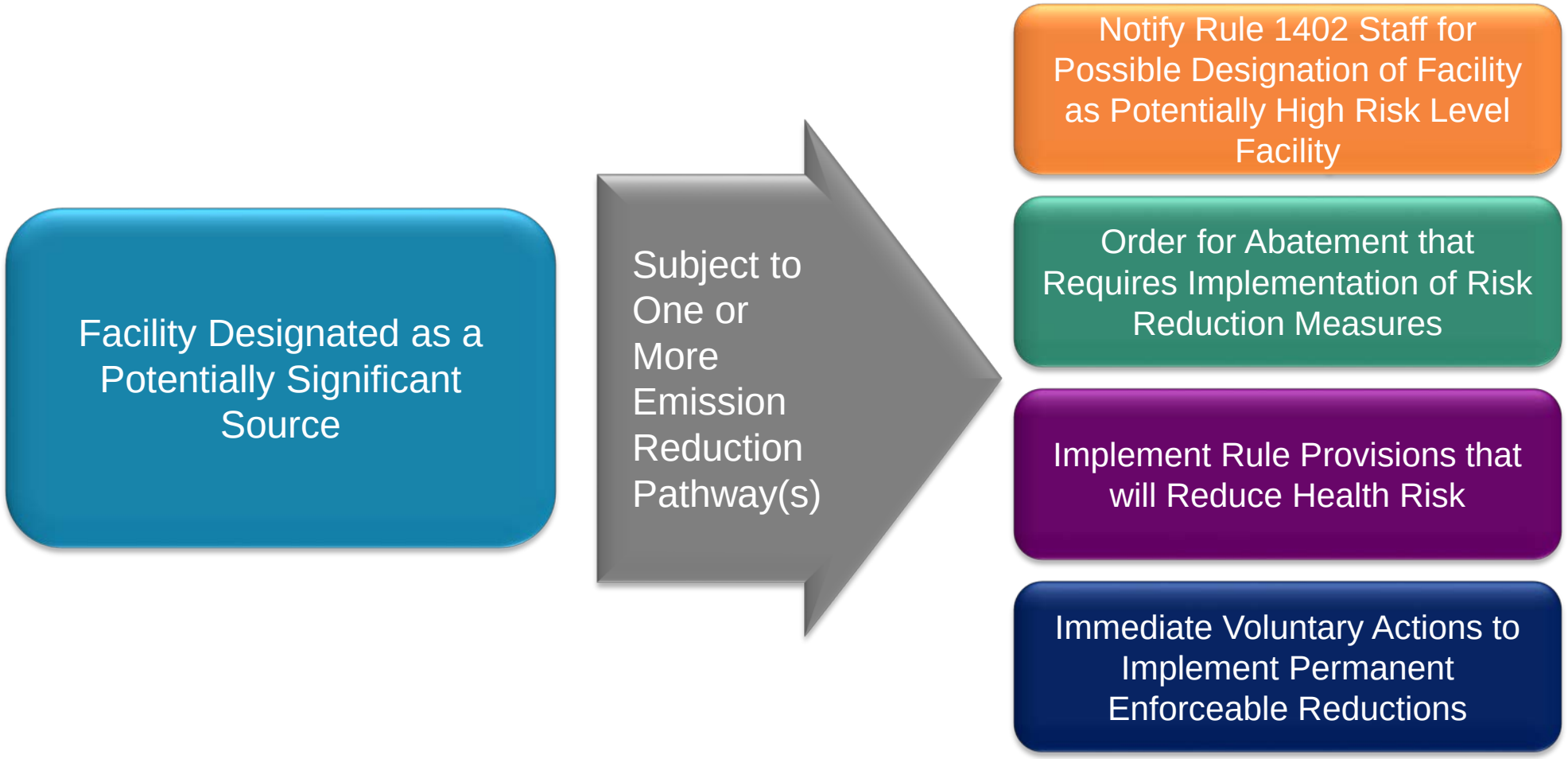
SCAQMD initiates monitoring and collects data	If cancer risk exceeds 100 in one million SCAQMD Notification	If facility is designated as a Potentially Significant Source	Submittal of Air Monitoring Plan	Proposed monitoring requirements
• SCAQMD initiates air monitoring • Data collection to: – Verify presence of toxic metals – Estimate health risk	• Provides findings explaining why SCAQMD notifying facility • Facility has 30 days to provide additional information	• Facility subject to monitoring requirements and would be subject to emission reduction measures (See next slide)	• Plan may be needed to identify placement of monitors • Plan not required, if max Ground Level Concentration is known	• Facility would begin monitoring 30 days from plan approval or 30 days from notification that a plan is not required

Designation as a Potentially Significant Source

If facility is designated as a Potentially Significant Source

- If health risk is > 100 in one million cancer risk a facility may be designated a Potentially Significant Source
- Facility would be subject to PR 1480 monitoring requirements such as:
  - Monitor air toxic metal(s) specified by SCAQMD
  - Minimum of two monitor locations
- Facility may be subject to emission reduction measures, such as:
  - Rule 1402
  - Order for Abatement
  - New rule requirements to address emission sources
  - Voluntary actions by facility

Emission Reduction Pathways



Proposed Monitoring Frequency

Approach for Developing Proposed Monitoring Frequency

- Reviewed frequency for ambient monitoring for various projects and programs
- Differentiated between source-oriented and regional monitoring efforts
  - Source-oriented monitoring is generally near a specific facility
  - Regional monitoring is not necessarily near a specific type of facility and may be used to characterize background levels
- Purpose of monitoring
  - Compliance (For example Rule 1420.1, 1420.2, and 1156)
  - Investigation (Paramount and Compton)
  - Regional assessment (Multiple Air Toxics Exposure Studies)

Existing Air Toxics Monitoring Activities

- EPA
  - National Ambient Air Quality Standards (NAAQS) – Lead
  - National Air Toxics Trend Station Program (NATTS) – Nickel, Arsenic, Cadmium, Manganese, Lead, Cobalt, others
- Regional
  - Multiple Air Toxics Exposure Study (MATES) includes air toxic metals
- Facility
  - SCAQMD Rules 1156, 1420, 1420.1 and 1420.2 – Hexavalent Chromium, Lead, and Arsenic
  - Orders for Abatement – Hexavalent Chromium

EPA Air Toxics Monitoring

Program	Applicability	Metals Monitored	Frequency
National Ambient Air Quality Standards (NAAQS)	Ambient air standard	Lead	1 in 6 days

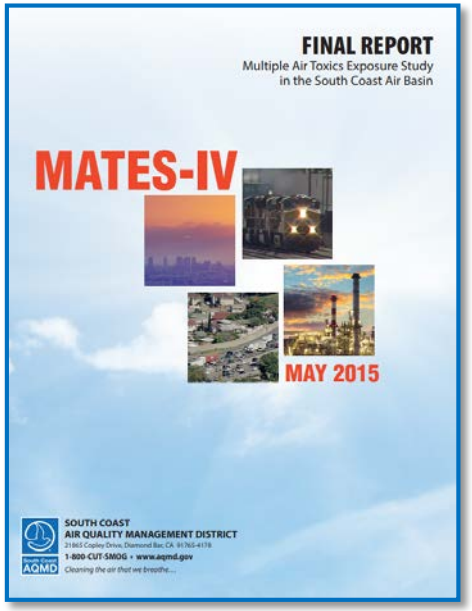
Program	Applicability	Metals Monitored	Frequency
National Air Toxics Trends Station (NATTS) Program	Long-term ambient air data	Nickel, Arsenic, Cadmium, Manganese, Lead, Cobalt, others	1 in 6 days

Regional Air Toxics Monitoring Activities – SCAQMD MATES IV

- Fixed site monitoring for toxic air contaminants in the South Coast Air Basin

Program	Location	Metals Monitored	Sampling Frequency
Multiple Air Toxics Exposure Study	Basin-wide[1]	Arsenic, Hexavalent Chromium, Lead, Selenium, Cadmium, Manganese, Copper, Nickel, and Zinc	1 in 6 days[2,3]

[1] Anaheim, Burbank, Central LA, Compton, Huntington Park, West Long Beach, North Long Beach, Pico Rivera, Rubidoux and San Bernardino
[2] MATES III had a sampling frequency of 1 in 3 days
[3] MATES IV had a sampling frequency of 1 in 6 days



Facility Air Toxics Monitoring Activities – SCAQMD Rules

- Facilities required to monitor for air toxics metals:

Regulation	Applicability	Metals Monitored	Sampling Frequency	Number of Monitors Req.
Rule 1156	Cement manufacturing facilities	Hexavalent Chromium	1 in 3 days	Three
Rule 1420	Metal melting or lead processing facilities (upon > 0.15 ug/m^3 or failure of source tests)	Lead	1 in 6 days	Two
Rule 1420.1	Large lead acid battery recycling facilities (>50,000 TPY of Lead)	Lead and Arsenic	Daily	Four
Rule 1420.2	Metal Melting Facilities (≥ 100 TPY of Lead)	Lead	Daily or 1 in 3 days*	Three

* Dependent on data from commissioning period of 30 days of daily monitoring

Facility Air Toxics Monitoring Activities – Orders for Abatement

- More frequent monitoring schedule required to characterize emission upon verification of presence of air toxic metals. Examples include:

Type of operation	Location	Metal Monitored	Sampling Frequency
Metal Finishing “A”	Newport Beach	Hexavalent Chromium	Daily
Metal Heat Treating	Paramount	Hexavalent Chromium	1 in 3 days
Metal Finishing “B”	Paramount	Hexavalent Chromium	1 in 3 days
Metal Finishing “C”	North Long Beach	Hexavalent Chromium	1 in 3 days

Characteristics of Regional and Facility Air Toxics Monitoring

Regional Monitoring

- Sampling frequency of MATES studies 1 in 6 or more
- Conducted for a one-year period every five years
- Monitors located throughout the basin to estimate air toxic risk levels in the Basin
- Identifies areas with elevated air toxic risks

Facility Monitoring

- Initial sampling generally more frequent than MATES (e.g., daily or 1 in 3 days)
- Assists in identifying emission patterns that may be correlated to operational activities
- Monitors are strategically placed near facility

Example: Cement Manufacturing Facility Monitoring, TXI Riverside

Regional Monitoring – MATES III

- MATES III monitor located in Rubidoux detected higher than average levels of hexavalent chromium
- Sampling monitoring frequency 1 in 3 days

Facility Monitoring – TXI Riverside

- Initial sampling frequency of 1 in 3 days
- Ambient monitors placed near Cal Portland and TXI Riverside
- Monitors assisted in identifying TXI as the source of elevated hexavalent chromium emission levels

Proposed Initial Air Monitoring Sampling Frequency

- Most source-oriented monitoring for toxic metals is 1 in 3 days
  - Captures facility operations better than 1 in 6 days
  - Reduces opportunity for a facility to modify operations based on sampling schedule
- Proposal
  - 1 in 3 days
  - 24 hour sampling period

Proposed Reduced Air Monitoring Sampling Frequency

- Staff considering provision for reduced sampling frequency, for example, to 1 in 6 days
- Factors under consideration include lower emission levels, implementation of emission reduction measures, etc.

Sampling and Analysis

- Monitoring personnel required to be certified through an Executive Officer approved class
- Ambient monitoring
  - Collection handling requirements
  - Laboratory analysis requirements

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
- SCAQMD 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
  - SCAQMD 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 SCAQMD

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

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

Staff Response to Comments

Comments Received Since Working Group Meeting #4

Comment #1	PR 1480 could have a lower evidentiary standard than Rule 1402
Comment #2	Clear and separate regulatory process between PR 1480 and Rule 1402
Comment #3	PR 1480 should provide methods used to designate a facility a Potentially Significant Source

Comments Received Since Working Group Meeting #4

Comment #4	Facilities should be allowed to review SCAQMD data before responding to notification
Comment #5	Screening tools are not sufficient to determine Potentially Significant Sources
Comment #6	Describe how SCAQMD will account for other pollution sources

Comment #1: PR 1480 triggers could have a lower evidentiary standard than Rule 1402

- PR 1480 would include provisions for:
  - SCAQMD findings prior to determining facility is a Potentially Significant Source
  - Allowing facilities to provide a response to notification
- Findings would be substantiated by emissions data collected (e.g., monitoring and source testing)

Comment #2: Clear and separate regulatory process between PR 1480 and Rule 1402

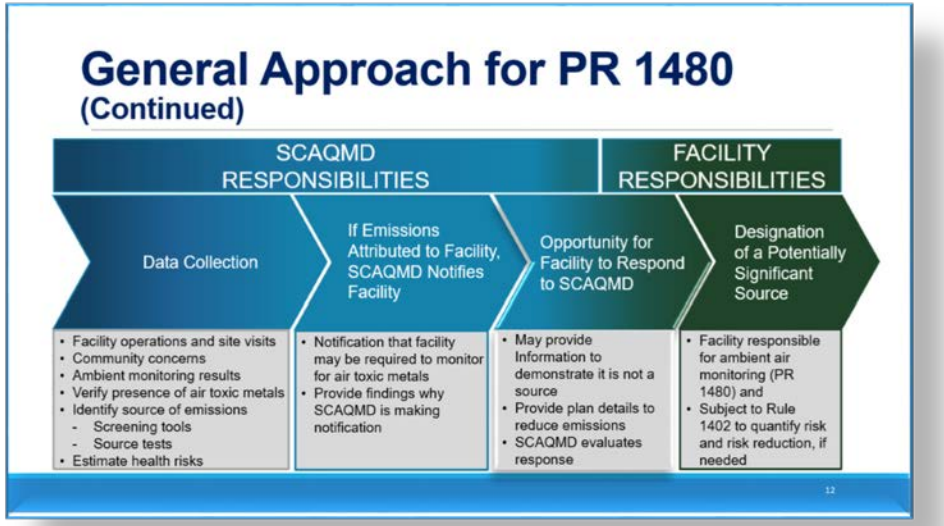
- PR 1480 would focus on monitoring of air toxic metal emissions
- Rule 1402 focuses on risk estimation, risk reduction, and public notification
- Emissions data (e.g., air monitoring data) collected by SCAQMD may be used for PR 1480 and Rule 1402
- A facility could be subject to both PR 1480 and Rule 1402

Comment #3: PR 1480 should provide methods used to designate a facility a Potentially Significant Source

- PR 1480 will specify procedures to designate a Potentially Significant Source, similar to designating Potentially High Level Risk Facilities under Rule 1402

Comment #4: Facilities should be allowed to review SCAQMD data before responding to notification

- Facility would have an opportunity to respond to notification
- Notification substantiated by information from data collection (e.g., monitoring, source testing, compliance and emissions data)



- Similar to the Rule 1402 process for determining Potentially High Risk Level Facilities, staff could meet with facilities
- Staff proposing the response period to be 30 days

Comment #5: Screening tools are not sufficient to determine Potentially Significant Sources

- Screening tools (e.g. glass plate sample, bulk sampling, XRF gun, source test screenings) would be used to:
  - Verify the presence of emissions
  - Identify sources of emissions
- Determination of a Potentially Significant Source would be based on ambient monitoring data

Comment #6: Describe how SCAQMD will account for other pollution sources

- Prior to requiring a facility to conduct ambient air monitoring, SCAQMD would investigate surrounding sources
- Analysis of ambient air monitoring data and source tests would consider:
  - Background concentration
  - Upwind concentration
  - Surrounding activities that may influence results

Next Steps

- 6th Working Group Meeting: May 2019
- Governing Board Meeting: 3rd quarter of 2019

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