Proposed Rule 1435 – Control of Toxic Air Contaminant Emissions from Metal Heating Operations

WORKING GROUP MEETING #9

October 29, 2026
2:30 PM (PT)
South Coast AQMD
Diamond Bar, CA

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Agenda

- Summary of Working Group #8
- Key Stakeholder Comments
- Reassessment of Building Enclosure Requirements
- Next Steps

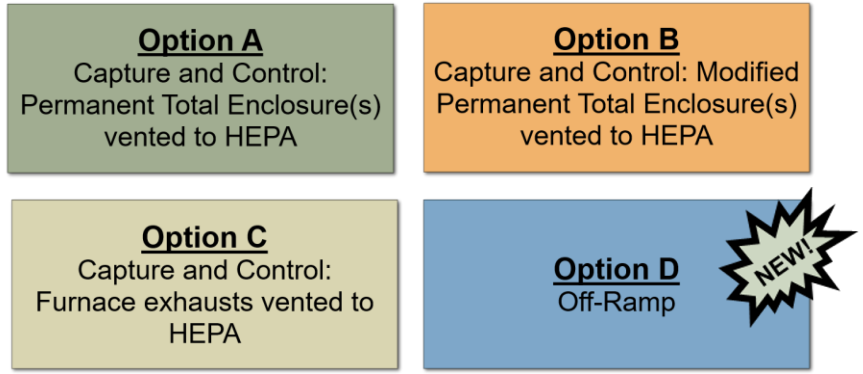
Summary of Working Group #8

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- Introduced “Option D” for air furnaces that do not process metals containing chromium
- Reassessed housekeeping requirements
  - Updated the frequency for periodic cleaning
  - Removed pressure washing requirement
- Reassessed quench tank requirements
  - Updated the frequency of water quench tank requirements
  - Added testing and maintenance requirements for non-water quench tanks

Revised Rule Concept 2.0

- Require emissions from heat treating air furnaces to be controlled, if:
  - Heating a material containing a metal in furnace
  - Greater than or equal to 1250 °F



Key Stakeholder Comments

Key Stakeholder Comments from Working Group #8

Comment #1

The percent chromium threshold should be consistent with Rule 1407.1

Comment #2

Non-air furnaces and air furnaces (< 1250 °F) should not be subject to housekeeping and quench tank requirements

Comment #3

Staff has received feedback about the challenges with monthly cleaning of the furnace interior and exterior

Comment #4

Non-water quench tanks should not be subject to testing requirements

Comment #5

The fenceline monitoring compliance pathway should be restored to ease the burden on community monitoring

Comment #1

The percent chromium threshold should be consistent with Rule 1407.1

Initial Rule Concept	Revised Rule Concept

• Key requirements of Option D:
  • Not heat material that contains more than **0.1% chromium by weight**
  • Permit condition to prohibit the heating of materials that contain more than **0.1% chromium by weight**
	• Key requirements of Option D:
	  • Not heat material that contains more than **0.5% chromium by weight**
	  • Permit condition to prohibit the heating of materials that contain more than **0.5% chromium by weight**

Response #1

- PR 1435 will align with the Rule 1407.1 definition of a chromium alloy to have regulatory consistency
- Rule 1407.1 defines a chromium alloy as any metal that is at least 0.5 percent chromium by weight
- Updating PR 1435 to align with the Rule 1407.1 definition retains:
  - Chromium content of material would be determined by manufacturer data sheets
  - Pathway based on maximum weight percent for metal alloys that contain trace amounts of chromium

Comment #2

Non-air furnaces and air furnaces (< 1250 °F) should not be subject to housekeeping and quench tank requirements

Response #2

- Air furnaces (< 1250 °F) will not be subject to fugitive or point source requirements
  - PR 1435 rule requirements will apply to furnaces greater than or equal to 1250 °F
  - Maintain the focus to reduce hexavalent chromium emissions
- Non-air furnaces (e.g., vacuum furnaces, endothermic furnaces) will only be subject to floor cleaning requirements
  - Industry representatives have proposed weekly cleaning of the floors
  - Consistent with existing housekeeping practices of facilities

Comment #3

Staff has received feedback about the challenges with monthly cleaning of the furnace interior and exterior

Response #3

- The 2021 CE-CERT study[1] found that internal cleaning of furnaces reduced hexavalent chromium emissions
- Staff also observed the accumulation of metal dust on the outside surfaces of furnaces during site visits
- Periodic cleaning of the interior and the exterior of the furnace chamber reduces fugitive hexavalent chromium emissions
- Cleaning frequency for air furnaces (≥ 1250 °F) has been updated to **quarterly** based on feedback received
- Considering an alternative equivalent cleaning frequency based on usage

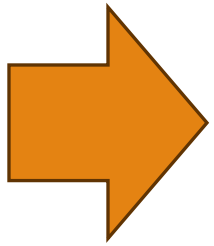
[1] http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1435/final-report-hexavalent-chromium-emissions-from-industrial-heat-treating-furnaces.pdf

Comment #4

Non-water quench tanks should not be subject to testing requirements

Initial Rule Concept

Water Quench Tank Requirements	Non-Water Quench Tank Requirements



Revised Rule Concept

Water Quench Tank Requirements

Response #4

- Non-water quench tanks will not be subject to PR 1435 quench tank requirements
- PR 1435 will focus on water quench tanks which are a known source of hexavalent chromium
  - Hexavalent chromium is highly soluble in quench water
  - Scale from parts dissolves in the water quench tank
  - Droplets from the water quench tank can become airborne

Comment #5

The fenceline monitoring compliance pathway should be restored to ease the burden on community monitoring

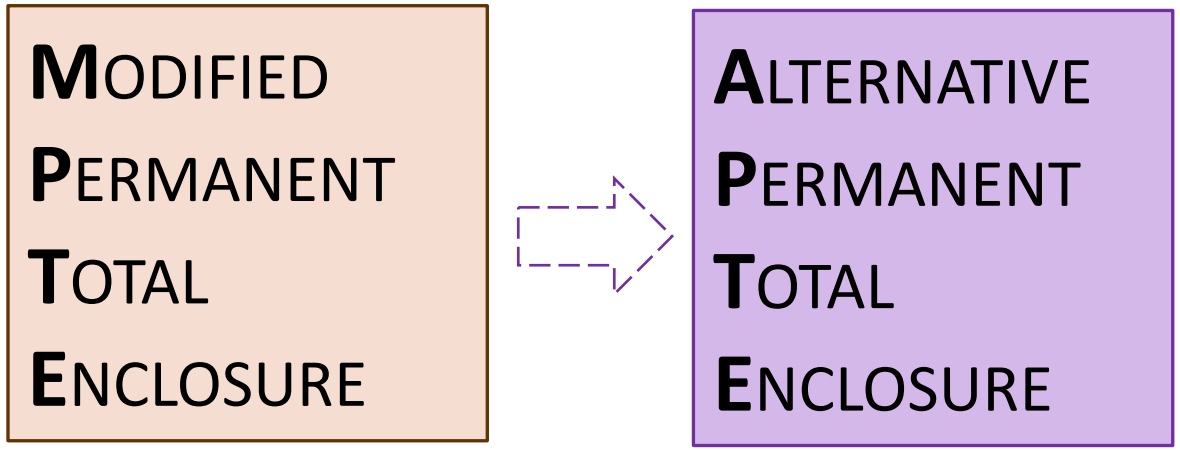
Response #5

- Community monitoring in Paramount has continued to demonstrate hexavalent chromium is present
- Most current monitoring data can be found at the City of Paramount website on the monitoring page
- Fenceline monitoring can assist in identifying sources of emissions, but is not an emission reduction strategy
- Technology-based approach for heat treating facilities will result in reduction of hexavalent chromium emissions
- PR 1435 will not include fenceline monitoring

Reassessment of Building Enclosure Requirements

Updated Terminology for Enclosure Requirements

- To avoid potential conflicts or confusion with the term “modified” used in the permitting process, PR 1435 will include a new terminology for Modified Permanent Total Enclosure moving forward



Fugitive Emission Sources

- Prior working group meetings identified the following potential sources of fugitive emissions at heat treating facilities:
  - Metal particulate dust accumulating on surfaces (e.g., floors)
  - Openings and gaps in buildings
  - Uncontrolled emissions from furnaces
  - Handling and storing of workpieces after heat treating (e.g., air cooling, water quench)
- Requirements to minimize emissions from fugitive sources include:



Observations at Site Visits

Staff made the following observations regarding potential building enclosure requirements to address fugitive sources during site visits:

- Strip curtains were not properly used or maintained
- Smoke test showed the flow of air would rise to the roof of the building above the plane of the collection point
- Observed operations occurring outside:
  - Cooling of parts
  - Quenching of parts



A smoke test being performed at a heat treating facility

Building Enclosure Openings

Initial Rule Concept

• Operate a metal heating furnace and conduct any fan or air cooling of heated parts or products within a building enclosure with openings:
  • Closed on opposite ends of the building enclosure
  • Closed facing a sensitive receptor or school within 1,000 feet

- Staff is retaining initial rule concepts for building enclosure opening requirements
- Permanent Total Enclosure (PTE) and Alternative Permanent Total Enclosure (APTE) designed openings may conflict with the building enclosure opening requirements (e.g., location of the building enclosure opening)
- PTE/APTE would be designed to control point and fugitive emissions

Heat Treating Furnaces

Initial Rule Concept	Revised Rule Concept

• Require any metal heating furnace to operate within a building enclosure that meets PR 1435 requirements
• Would not apply to furnaces that:
  • Operate at maximum temperatures of less than 1250 °F
	• Require any heat treating air furnace to operate within a building enclosure that meets PR 1435 requirements or within a PTE/APTE
	• Would not apply to air furnaces that:
	  • Operate at maximum temperatures of less than 1250 °F
	  • Complying with Option D

Supporting Operations

Initial Rule Concept	Revised Rule Concept

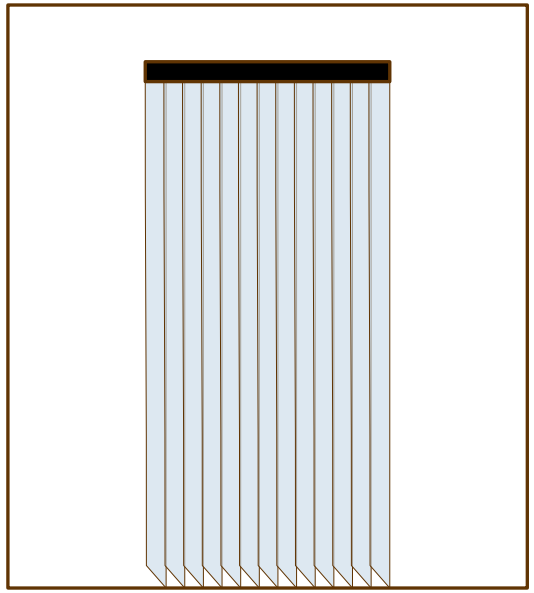
• Require any fan or air cooling of heated parts or products within a building enclosure that meets opening requirements
• Require any grinding or cutting of metal products within a building enclosure that meets opening requirements
  • Does not include operations regulated under Rule 1430
	• Require any fan/air cooling/<u>water quenching</u> of heated parts or products within a building enclosure that meets opening requirements or <u>within a PTE/APTE</u>
	• Require any grinding or cutting of metal products within a building enclosure that meets opening requirements or <u>within a PTE/APTE</u>
	  • Does not include operations regulated under Rule 1430
	• <u>Would only apply to parts or products that are processed in an air furnace (≥ 1250 °F)</u>

Options for Closing Building Enclosure Openings

Initial Rule Concept	Revised Rule Concept

• Options for closing building enclosure openings:
  • Automatic door
  • Strip curtain
  • Vestibule
  • Airlock system
  • Barrier or obstruction
	• Retaining all options from initial rule concepts
	• Additional requirements for strip curtains:
	  • Overlapping segments
	  • Properly installed from the top of head jamb of the door to the floor
	  • Free of unintended openings

Example of Compliant Strip Curtain



- Staff observed during site visits that strip curtains were not properly maintained (e.g., holes, cut) or utilized (e.g., tied and drawn to the side)
- Additional requirements are to ensure that strip curtains are working as intended

Required Sources within a Building Enclosure

PR 1435 Sources

• Air furnace (≥ 1250 °F)
• Operations following an air furnace (≥ 1250 °F):
  • Air cooling
  • Fan cooling
  • Water quenching
  • Metal grinding or cutting

- In lieu of operating these sources in a PR 1435 building enclosure, these sources may be operated within a PTE/APTE
- Design and operating requirements for PTE/APTE will be discussed in the subsequent section

PTE and APTE Requirements

PTE vs. APTE

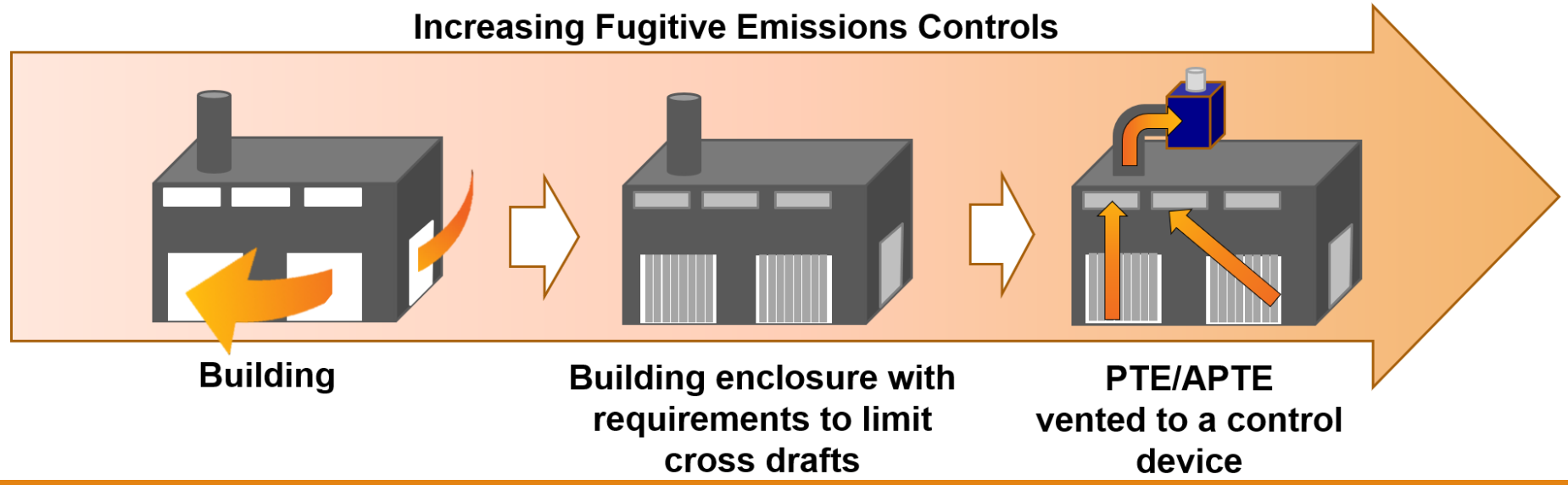
- Permanent Total Enclosure is a building enclosure designed to direct emissions from within the building to a control device with established design EPA Method 204 to ensure maximum collection
- Alternative Permanent Total Enclosure is a building enclosure that focuses on controlling building emissions instead of a processing the entire volume of the building

Parameter	PTE	APTE
Number of Air Exchanges Per Hour	Minimum of four per hour	**No minimum number of air exchanges**
Natural Draft Opening	Not exceed 5% of the surface area	
Facial Velocity Through Natural Draft Openings	≥ 200 feet per minute into the enclosure	
Access Doors/Corridor	Closed except during the passage of vehicles, people or equipment, (if excluded from 5%)	

Overview of Building Enclosure Levels

Building Enclosure
A building with design requirements to minimize cross-drafts and reduce fugitive emissions

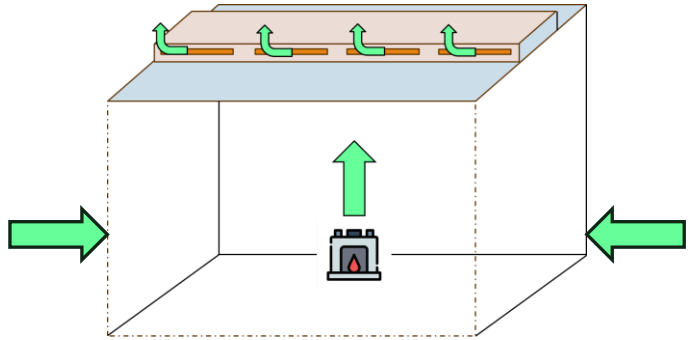
PTE/APTE
A type of building enclosure designed to direct emissions from within the building to a control device



Closing All Openings of a PTE/APTE

Rule Concept
• Close all openings, excluding openings that are part of the design of the PTE/APTE

- Facilities operating an air furnace (≥ 1250 °F) in a PTE/APTE would be required to close all roof openings
  - Ensure fugitive emissions would not leave PTE/APTE through roof openings
- Staff observed the pathway of emissions in a heat treating facility to be upward and inward



Updated Natural Draft Opening Limit

Initial Rule Concept		Revised Rule Concept	
Option A – PTE	**Option B – APTE**	**Option A – PTE**	**Option B – APTE**
• Natural draft opening limit of 5% of the surface area	• Natural draft opening limit of 3.5% of the surface area	• Natural draft opening limit of 5% of the surface area	• Natural draft opening limit of 5% of the surface area

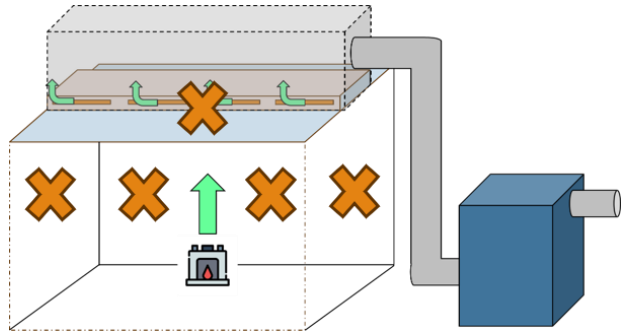
- Revised rule concept to require a natural draft opening limit of 5% of the surface area for APTE
  - Provides guardrails to maintain minimum inward facial velocity
  - Aligns natural draft opening limit with PTE and Method 204

Differential Pressure Monitoring

Rule Concept

• Install and maintain continuous recording of differential pressure monitors on:
  • North, west, south, and east walls of the PTE/APTE at least six feet from the ground
  • Ceiling of the PTE/APTE
  • The furthest wall location from the collection point of the control system
  • Throughout the PTE/APTE to ensure that a negative pressure is maintained within the PTE/APTE

- Different operations throughout the facility can affect the thermal buoyancy and cause varying pressures in the facility
- An acceptable inward face velocity may be measured in one portion/height of a PTE/APTE, but not in another location



Inspection of PTE/APTE

Initial Rule Concept	Revised Rule Concept
• Conduct a monthly visual inspection	• Conduct a periodic visual inspection, thermal camera inspection, and smoke test

- The periodic inspection would identify breaches in the PTE/APTE
  - Breaches in the PTE/APTE include breaks, cracks, or other undesigned openings
- If the inspection identifies a breach, a repair would be required

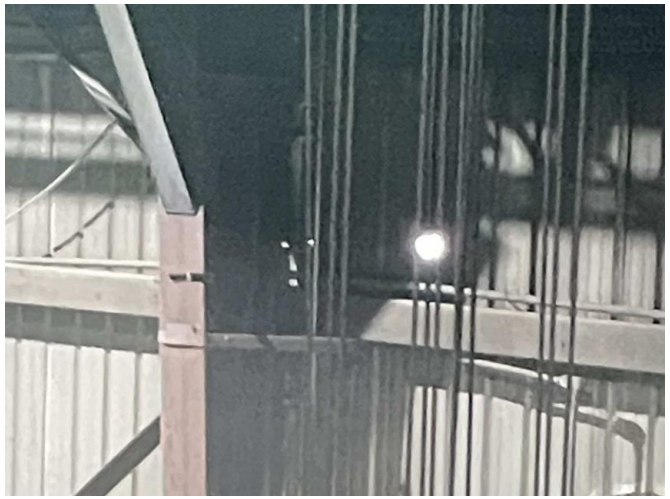
Inspection Methods

- PR 1435 will require a prescriptive method to inspect the PTE/APTE to ensure the integrity of the structure as an air pollution control technique
- Inspection methods used to demonstrate the integrity of PTE/APTE with at least one heat treating air furnace in operation

Visual Inspection	• Visual inspection of PTE/APTE interior at the ground level
Thermal Camera Inspection	• Thermal cameras utilize thermal infrared technology to detect infrared energy (heat)
Smoke Test	• Visual representation of air flow within the PTE/APTE

Visual Inspection

- Description:
  - Visual inspection of PTE/APTE interior at the ground level
- Purpose:
  - To identify breaches at the ground level without any additional equipment
- Rule Concept:
  - Tester will walk around the interior of the PTE/APTE to observe exterior light penetration for undesigned openings
  - Observations would be recorded and operator would make repairs, if necessary



Thermal Camera Inspection

- Description:
  - Thermal cameras utilize thermal infrared technology to detect infrared energy (heat)
- Purpose:
  - Identify areas of heat anomalies on the PTE/APTE for further investigation
- Rule Concept:
  - Third party conducts thermal inspection of the entire exterior of the PTE/APTE
  - Facility receives a thermal inspection report identifying potential anomalies
  - Within three days of receiving the report, conduct a visual inspection of identified areas, record observations, and repair areas, if necessary



Smoke Test

- Description:
  - Provides a visual representation of air flow within PTE/APTE
- Purpose:
  - Verify negative pressure within the PTE/APTE
  - Emissions from the air furnace are being collected
- Rule Concept:
  - Testing is performed with smoke generator at the loading area of each furnace
  - Acceptable smoke test will show a direct stream to the collection location of the air pollution control device
  - Testers will document the test with video, photos and written records (e.g., location, time)



An example of a smoke test

Detection and Repair

- Within 24 hours of detection of a breach or failed smoke test, notify the Executive Officer:
  - Date, time, size, and location of the breach or where failed smoke test occurred
- After detection of breach or failed smoke test, facility shall not conduct any new heat treating operations until repairs are complete and verified
  - Verify repairs by repeating the same inspection method

Assessment	Frequency
Visual Inspection	Weekly
Thermal Inspection	Quarterly
Smoke Test	Monthly

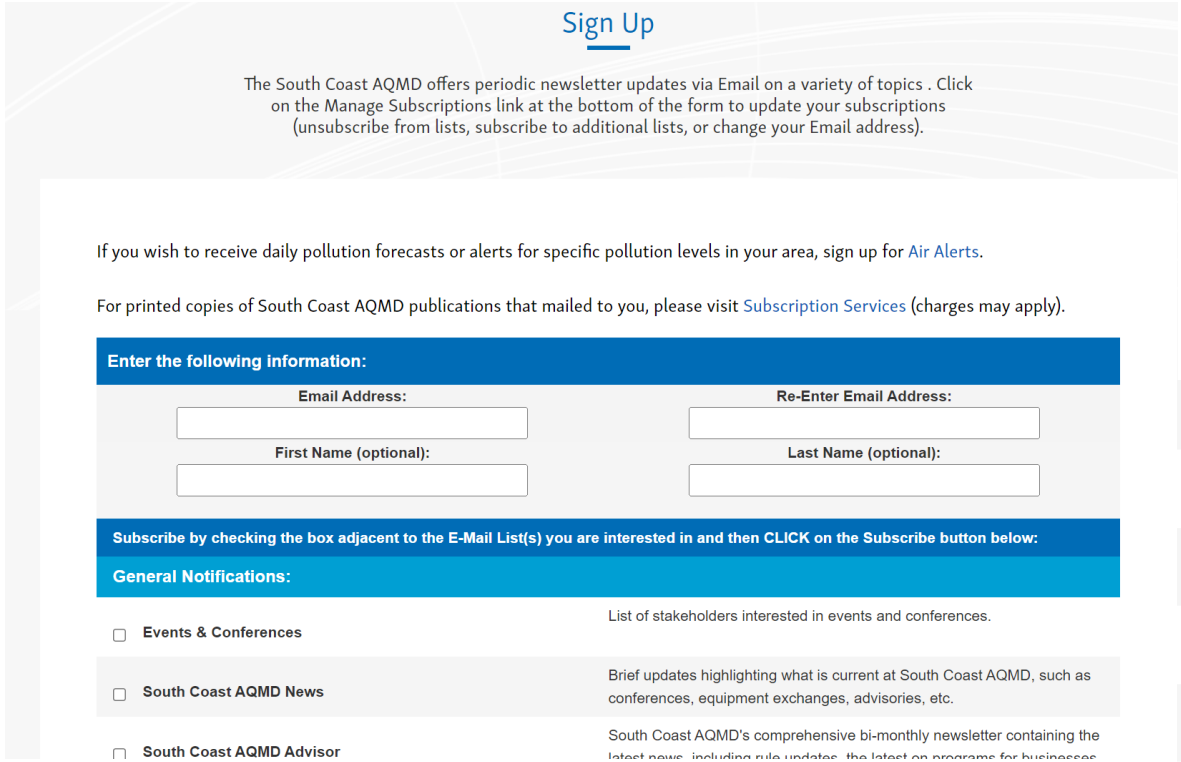
Next Steps

Next Steps

- Continue site visits
- Draft initial rule language
- Working Group Meeting #10 – Rule Language

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