Working Group Meeting #1
Proposed Amended Rule 1420
Emissions Standard for Lead

March 8, 2017

SCAQMD Headquarters

Diamond Bar, CA

Lead National Ambient Air Quality Standard

- Federal Clean Air Act requires U.S. EPA to set National Ambient Air Quality Standards (NAAQS) for lead and criteria pollutants
- Lead NAAQS set by EPA in 1978 at 1.5 µg/m^3 averaged over a calendar quarter
- 2008 US EPA amended the Lead NAAQS by:
  - Lowering lead standard ten-fold from 1.5 µg/m^3 to 0.15 µg/m^3; and
  - Revising averaging period to a 3-month rolling average

2008 EPA Lead NAAQS

- Revisions to the 2008 Lead NAAQS based on:
  - More than 6,000 new studies conducted since 1990
  - Adverse health effects shown at much lower levels of lead in blood than previously recognized
    - Children found to be most vulnerable
    - Low levels of exposure linked to poor IQ, learning and memory in children

Health Effects of Lead

- A neurotoxin which interferes with brain and nervous system development
- A probable human carcinogen
- Broad range of health effects:
  - Children: Effects nervous system and brain, weakens immune system
  - Adults: Increased blood pressure, cardiovascular disease, decreased kidney function

Attainment Status

- Dec. 31, 2010 - EPA designated a portion of L.A. County as nonattainment for the 2008 lead NAAQS
  - Based on 2007 – 2009 data period
  - Exceedances recorded at two (2) source-specific monitors located in Vernon and the City of Industry
  - Two (2) large lead acid battery recyclers identified as being in violation
- For 2009 – 2011 data period, only Vernon monitor still exceeded lead standard
- 2012 - SCAQMD Governing Board adopted lead State Implementation Plan (SIP)

SIP Commitments

- SIP attainment strategy committed to:
  - A control measure to amend Rule 1420
  - Lowering the ambient limit to 0.15 $\mu g/m^3$ to correspond with the 2008 lead NAAQS
  - Retaining more stringent averaging period of a 30 day rolling average
  - Adding language to Rule 1420 to clarify New Source Review (NSR) requirements for stationary lead sources, consistent with SCAQMD's Reg. XIII and federal NSR requirements

Rule 1420 Series Approach

Rule 1420	Rule 1420.1	Rule 1420.2
• Adopted in September 1992 • "Catch All Rule" – applicable to facilities that use or process lead-containing materials	• Initially adopted in 2010 • Amended in 2014 and 2015 • Applicable to lead-acid battery recycling facilities that process more than 50,000 tons of lead a year • Originally affected two facilities – Exide Battery and Quemetco (Exide shutdown in 2015)	• Adopted in October, 2015 • Applicable to facilities melting more than 100 tons of lead annually • Affected 13 facilities • Includes iron and steel mills, storage battery manufacturers, aluminum secondary smelting and alloying operations, nonferrous metal foundry

Lead Concentration Limits in Rule 1420.1 and 1420.2

SCAQMD Regulation	Effective Dates	Ambient Lead Concentration ($\mu g/m^3$) averaged over any 30 consecutive days
Rule 1420.1	Prior to 1/1/16	0.15
	1/1/16 – 12/31/16	0.11
	On or after 1/1/17	0.10
Rule 1420.2	10/2/15 – 3/31/18	0.15
	On or after 4/1/18	0.10

EPA's Approach to Establishing the 2008 Lead NAAQS

- Use of an evidence-based or air-related IQ loss framework that took into consideration:
  - Ambient lead standard level (μg/m^3)
  - Air-to-blood ratios (in μg/dL blood lead per μg/m^3 air concentration)
  - Slope for concentration-response (C-R) function in terms of IQ decrement per μg/dL blood lead)
- EPA used a central value of air-to-blood ratio of 1:7 (The range varies from 1:5 to 1:10)
  - An air-to-blood ratio of 1:7 correlates with a mean air-related IQ loss of 2 points and an ambient level of 0.15 μg/m^3
  - An air-to-blood ratio of 1:10 correlates with a mean air-related IQ loss of 2 points and an ambient level of 0.10 μg/m^3

Potential Universe for PAR 1420

- Reviewed SCAQMD permitting databases to:
  - Identified industry categories based on North American Classification Systems (NAICS) codes
  - Identified equipment lists for facilities in each NAICS category based on:
    - Basic equipment that could be lead-related
    - Control equipment that could be lead-related
- Reviewed inspection reports to capture information not included in permitting database of equipment lists
- Reviewed emissions data reported through the Annual Emissions Reporting (AER) program to identify sources reporting lead emissions

Potentially Affected Sources

Facility Description	No. of Facilities
Iron and Steel Mills, Secondary Smelters and Foundries	
Iron and Steel Mills	3
Secondary Smelting	3
Aluminum Rolling, Drawing and Extruding	12
Iron Foundries	5
Non-Ferrous Metal and Die Casting Foundries	14
Aluminum Foundries	20
Storage Battery Manufacturing (lead-acid and Ni – Cd rechargeable)	1
Aircraft Parts Manufacture and Assembly	
Aircraft (Parts) Manufacturing & Assembling	2
Aircraft Parts Manufacturing (except engines), including Prototypes	3
Electroplating and Electronics, including Printed Circuit Boards	
Electroplaters (Tin Plating)	10
Electronics and Printed Circuit Board Manufacturing and Assembly	40

Characteristics of Source Categories

- Iron and steel mills, secondary smelters, foundries
  - Raw materials consist of predominantly large volumes of scrap metals
  - Very high temperatures of operation
  - Raw materials may contain lead and other toxic metals
- Storage battery manufacturing
  - Raw materials predominantly consist of lead
- Aircraft parts manufacturing and assembling
  - Raw materials consist of specific metals and specialty alloys
  - Raw materials contain multiple trace metals
  - Very high temperatures of operation
- Electroplaters and electronics, including printed circuit boards
  - Primarily tin plating and lead soldering operations
  - Raw materials contain lead
  - Raw materials volumes relatively small
  - Relatively lower temperatures of operation

Justification for 0.10 µg/m^3

- Air-to-Blood Ratio of 1:10 provides more protection for segment of population (children under age 5) most vulnerable to lead exposure than a ratio of 1:7
- Support for use of air-to-blood ratio closer to 1:10
  - Clean Air Scientific Advisory Committee (CASAC) recommends use of an air-to-blood ratio closer to 1:9 – 1:10
  - EPA's Children's Health Protection Advisory Committee (CHPAC, 2008)
  - The Northeast States for Coordinated Air Use Management (NESCAUM)
  - Michigan Department of Environmental Quality

Justification for 0.10 µg/m^3 *(Continued)*

Other (Child) Related Health Issues

- Affected at exposure levels appreciably lower than previously recognized
- The developing nervous system in children is among the most sensitive end-points
- Pre-school children or children under five years old are most vulnerable to exposure and adverse health effects
- Younger children absorb substantially more lead than adults, especially those under 2 years of age
- No study has determined a level of lead in blood that does not impair child cognition, with effects being long-lasting
- Damage to a child's developing brain is not reversible

Initial Concepts for PAR 1420 Ambient Concentrations

- Current Rule 1420 has an ambient lead concentration standard of 1.5 µg/m^3 averaged over 30 days
- Proposing to revise ambient lead concentration consistent with Rules 1420.1 and 1420.2
  - 0.15 µg/m^3 averaged over any 30 days, date of adoption
  - 0.10 µg/m^3 averaged over any 30 days, phased schedule
  - Considering phased schedule similar to Rule 1420.2

SCAQMD Regulation	Effective Dates	Ambient Lead Concentration (µg/m^3) averaged over any 30 consecutive days
Rule 1420.2	10/2/15 – 3/31/18	0.15
	On or after 4/1/18	0.10

PAR 1420 Initial Concepts *(Continued)*

- Lower lead ambient concentration standard consistent NAAQS, Rule 1420.1 and Rule 1420.2
- Point source requirements
  - Evaluate control efficiency approach
  - Control efficiency may not be suitable for analyzing low-emitting sources; considering an emission rate approach
- Update source testing
  - Existing Rule 1420 required a one-time source test
  - Periodic source testing needed to verify compliance
- Enclosures
  - Existing Rule 1420 does not require enclosures
  - Enclosures are effective for containing fugitive emissions
  - Assessing appropriate type of enclosures for PAR 1420 sources

PAR 1420 Initial Concepts *(Continued)*

- More prescriptive housekeeping measures
- Considering on-ramp for ambient monitoring
- Amend current exemption
  - Under Rule 1420, facilities that process more than 2 tons of lead per year and emit less than 0.5 pounds of lead per day (182.5 pounds per year) not required to:
    - Vent emissions to a collection system
    - Duct emissions (that are vented to a collection system) to a lead control device
    - Source test
    - Conduct ambient lead monitoring
    - Conduct air dispersion modeling
  - Evaluating scope of exemption
  - Threshold too high

Next Steps

Action	Target Dates
Next Working Group Meeting	Early April 2017
Continue Field Visits	1st and 2nd Quarters 2017
Public Workshop	2nd or 3rd Quarter 2017
Set Hearing/Public Hearing	Oct/Nov 2017