SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Preliminary Draft Staff Report
Proposed Amended Rule 1420 – Emissions Standard for Lead

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TABLE OF CONTENTS

List of Tables and Figures

EXECUTIVE SUMMARY

Rule 1420 was adopted approximately twenty-five years ago in September 1992 with the purpose of reducing lead emissions from non-vehicular sources. At the time of rule adoption, the National Ambient Air Quality Standard (NAAQS) for lead, previously established in 1978, was 1.5 $\mu g/m^3$ averaged over a calendar quarter. However, in 2008, the lead NAAQS was reduced ten-fold to 0.15 $\mu g/m^3$ averaged over 90 days based on more than 6,000 new health studies that were conducted since 1990. These studies identified lead as a probable carcinogen and showed that adverse health effects occurred at much lower levels than previously recognized. Studies also showed that children were found to be most vulnerable to lead exposure with low levels of exposure linked to poor IQ, learning, and memory in children. A broad range of health effects are also associated with lead exposure for both children and adults. In children, lead affects the nervous system and weakens their immune systems; whereas in adults lead exposure was found to cause increased blood pressure, cardiovascular disease and decreased kidney function.

On December 31, 2010, EPA designated a portion of Los Angeles County as nonattainment for the 2008 lead NAAQS based on exceedances at two (2) source-specific monitors located in Vernon and the City of Industry. These exceedances along with the revision of the lead NAAQS resulted in the SCAQMD Governing Board amending Rule 1420.1 – Emission Standards for Lead and Other Toxic Air Contaminants at Large Lead-Acid Battery Recycling Facilities and adoption of a 2012 lead State Implementation Plan (SIP), which committed to a control measure to amend Rule 1420, lowering the lead concentration limit to 0.15 $\mu g/m^3$, and retaining a more stringent averaging period of a 30-day rolling average. Subsequently, SCAQMD staff was faced with the task of revising Rule 1420 to address a universe consisting of several different types of industries. To simplify the rulemaking task and to address the major lead contributors, staff adopted Rule 1420.2 in 2015 to address a subset of the Rule 1420 universe consisting of 13 large metal melting facilities, that each melt greater than 100 tons of lead per year.

Since the adoption of Rule 1420 and subsequent adoptions of Rules 1420.1 and 1420.2, there has been a considerable amount of source testing and monitoring conducted at lead processing facilities. Stack testing has shown that lead emission control equipment has improved considerably to the point that achieving lead control efficiencies of 99 percent or greater is standard. It has also been discovered that fugitive emissions are a far greater contributor to lead emissions monitored at or beyond the fence line. This factor has triggered a greater need for Proposed Amended Rule (PAR) 1420 to place more emphasis on expanding housekeeping requirements and for lead operations to be conducted in total enclosures.

In order to maintain consistency with Rules 1420.1 and 1420.2, PAR 1420 will require facilities to maintain ambient lead concentration limits below 0.150 $\mu g/m^3$ averaged over 30 consecutive days, beginning November 3, 2017 until December 31, 2020. On and after January 1, 2021, facilities will be required to maintain ambient lead concentrations below 0.100 $\mu g/m^3$ averaged over 30 consecutive days. Establishing an ambient air lead concentration limit that is even less than the lead NAAQS is more health protective for communities that live around lead processing facilities, particularly for younger children. A detailed discussion with substantial scientific information and data is presented in Chapter 1, Section "Justification for Lowering Ambient Air

to 0.100 μg/m^3". This discussion is based on EPA's development of the 2008 Lead NAAQS and the 2016 Final Decision to Retain the Current Lead NAAQS evidence-based framework and supports the SCAQMD policy decision to set the ambient lead concentration limit at 0.100 μg/m^3.

Unlike Rules 1420.1 and 1420.2, PAR 1420 will not require mandatory ambient air monitoring, although air monitoring will be required if SCAQMD monitors detect exceedances in ambient lead concentration limits or applicable facilities fail two point source tests over a 36 month period. Source testing will be required on a biennial basis with testing frequency further reduced to quadrennial (from the date of the test) if a test determines that outlet emissions are less than 0.00015 pounds per hour and lead control efficiency for the control device tested is 99 percent or greater. The rule amendment provides additional incentives for facilities by allowing owners or operators to test the stack outlet only to demonstrate lead emissions of less than 0.00030 pounds per hour, subsequent to the initial performance test of the control equipment. In addition, PAR 1420 establishes requirements for total enclosures where lead processing occurs, housekeeping measures, air pollution control device monitoring, and recordkeeping requirements.

PAR 1420 will address lead emissions from lead smelters, foundries, smaller lead-acid battery manufacturers and recyclers, lead-oxide, brass, and bronze producers, and metal melting facilities. Approximately 80 percent of the facilities that will be affected by PAR 1420 are associated with the manufacture of printed circuit boards, semiconductors and other electronic components. Based on initial estimates these facilities are expected to process less than 2 tons of lead per year and will only be subject to the conditional ambient monitoring limits and housekeeping and recordkeeping provisions. Also, at the majority of the electronic-related businesses, the temperatures to which lead is heated are not substantial enough to promote vaporization and facilities in this category that were visited were found to already exercise good housekeeping practices.

The proposed amendments will implement the 2016 Air Quality Management Plan Control Measure TXM-07 (Control of Lead Emissions from Stationary Sources) and will be incorporated into the State Implementation Plan.

CHAPTER 1: BACKGROUND

INTRODUCTION

On October 15, 2008, the U.S. Environmental Protection Agency (EPA) amended both the primary (health-based) and secondary (welfare-based) NAAQS for lead from a level of 1.5 µg/m^3 averaged over a calendar quarter to 0.15 µg/m^3 averaged over a rolling 3-month period based on studies that demonstrate health effects at much lower levels of lead exposure than previously believed. The purpose of Proposed Amended Rule 1420 – Emissions Standard for Lead (PAR 1420) is to protect public health by reducing lead emissions from lead processing facilities which will minimize exposure to lead emissions from these facilities and ensure attainment and maintenance of the National Ambient Air Quality Standard (NAAQS) for lead. The new standard provides increased protection for children and other at-risk populations against an array of health effects, most notably neurological effects in children, including neurocognitive and neurobehavioral effects.

REGULATORY HISTORY

Rule 1420 was adopted in September 1992 and has not been amended since its adoption. Rule 1420 applies to facilities that process or use lead-containing materials. These include, but are not limited to, primary or secondary lead smelters, foundries, lead-acid battery manufacturers or recyclers, and lead-oxide, brass and bronze producers. Rule 1420 includes an ambient air quality standard of 1.5 µg/m^3 averaged over a 30-day period. As a result, the rule needs to be updated to reflect the current NAAQS of 0.15 µg/m^3. The rule includes requirements for point source controls, monitoring, sampling, recordkeeping, and reporting. Rule 1420 requires facilities that process more than two tons of lead per year to submit a Compliance Plan that provides information on how the facility will conduct monitoring, conduct air dispersion modeling, and implement requirements to install and implement point source controls.

Since the adoption of Rule 1420 in 1992, an abundance of new and updated information including, but not limited to, lead emissions data, ambient air monitoring data and emissions control techniques has become available. Ambient air quality data from 2007-2009 indicated a violation of the 2008 NAAQS near a large lead-acid battery recycling facility, and highlighted the need to establish stricter requirements to lead sources that were regulated under Rule 1420. Rule 1420 applied to a broad category of lead emitting sources where the control requirements would be generally the same, but larger sources with the potential of greater lead emissions needed additional requirements. As a result, two rules that represented the two largest subcategories of Rule 1420 were developed: Rule 1420.1 – Emission Standards for Lead and Large Lead-Acid Battery Recycling Facilities was adopted November 5, 2010 and Rule 1420.2 – Emission Standard for Lead from Metal Melting Facilities was adopted October 2, 2015. Rule 1420.2 applies to large lead-acid battery recycling facilities. Currently, there is only one such facility operating in the Basin. Rule 1420.2 addresses 13 of the largest metal melting facilities that each emit in excess of 100 tons of lead per year. Proposed Amended Rule applies to the remaining lead emitting sources.

Lead sources have also be regulated by the California Air Resources Board and U.S. EPA. In January 1993, CARB adopted the Airborne Toxic Control Measure for Emissions of Toxic Metals from Non-Ferrous Metal Melting. The state regulation requires control devices for lead and other toxic metal emission points, control efficiency requirements for control devices, fugitive emission control, and recordkeeping. In June 1997, the U.S. EPA adopted the National Emissions Standards

for Hazardous Air Pollutants (NESHAP) from Secondary Lead Smelting. The federal regulation requires lead emission concentration limits of lead control devices, control of process fugitive emissions, monitoring, recordkeeping, and reporting. On July 16, 2007, EPA finalized a regulation affecting lead emissions from all lead-acid battery manufacturing facilities, several of which are regulated under Rule 1420.2. The federal regulation required lead emission concentration limits, testing, monitoring, recordkeeping, and reporting requirements

COMPLIANCE WITH THE LEAD NAAQS

In 1970, the California Air Resources Board (CARB) established a state ambient air quality standard for lead of 1.5 µg/m3 averaged over 30 days. In October 1978, the U.S. EPA adopted the NAAQS for lead, requiring attainment with a lead ambient concentration of 1.5 µg/m^3 averaged over a calendar quarter. 30 years after promulgation of lead NAAQS, U.S. EPA lowered the lead NAAQS to 0.15 µg/m^3 averaged over a rolling 3-month period.

On December 31, 2010, the EPA designated a portion of Los Angeles County as non-attainment for the 2008 NAAQS for lead based on monitored air quality data from 2007-2009 that indicated a violation of the NAAQS near a large lead-acid battery recycling facility. SCAQMD Rule 1420.1 – Emission Standards for Lead from Large Lead-acid Battery Recycling Facilities was adopted on November 5, 2010 to control emissions of lead from large lead-acid battery recycling facilities in order to reduce lead emissions and help ensure attainment with the 2008 NAAQS for lead of 0.150 µg/m^3.

In 2012, the SCAQMD Governing Board adopted the lead State Implementation Plan (SIP) and committed to a control measure to amend Rule 1420, which was adopted in September 1992, in addition to a more stringent averaging period of a 30-day rolling average. The SCAQMD partially addressed the control measure commitment through the adoption of Rule 1420.2 in October 2015, which addressed 13 of the largest metal melting facilities that each emit in excess of 100 tons of lead per year and the amendments to Rule 1420.1 in 2014 and 2015. Rules 1420.1 and 1420.2 combined, addressed 15 of the largest lead sources in the SCAQMD, but there are other smaller sources that have not been addressed under the new NAAQS. Although existing federal and state regulations also control lead emissions from this source category, additional requirements similar to those that have effectively reduced emissions from large lead-acid battery recyclers and metal melting facilities would more adequately protect public health. Therefore, PAR 1420 seeks to address these facilities with the objective to further protect public health by minimizing public exposure to lead emissions and preventing exceedances of the lead NAAQS in the Basin.

PUBLIC PROCESS

PAR 1420 is being developed through a public process. A working group was formed to provide the public and stakeholders an opportunity to discuss the proposed rule and provide the SCAQMD staff with important input during the rule development process. The working group and interested parties are comprised of a variety of stakeholders including representatives from industry, consultants, environmental groups, community groups, and public agency representatives. The SCAQMD staff has held three (3) working group meetings. To date, the working group has convened on March 8, 2017, May 31, 2017, and July 6, 2017. Future working group meetings are planned. A Public Workshop is schedule to be held on September 7, 2017 to present the proposed rule and receive public comment.

LEAD

Lead is a naturally occurring metal found in the earth's crust. The metal is grayish in color and is soft, malleable, and ductile. It is also a limited electrical conductor and highly impervious to corrosion. This unique combination of physical properties has made it desirable for many uses in industries such as construction, piping, roofing, and lead-acid storage battery manufacturing. As a result, some business operations solely recover lead from lead-bearing materials through secondary smelting operations for use in the abovementioned industries. For some industries, lead is undesirable and considered an impurity to its final product. Lead for these industries results from the melting of recycled scrap metal that either contain trace amounts of lead, or inadvertently enter the process even after inspection to identify scrap metal that may contain lead.

Lead can be released into the ambient air in the form of particles that fall out onto the ground or other surfaces by rain or gravitational settling. Lead is strongly adsorbed in the soil and is generally retained in the upper layers where it does not leach appreciably into the subsoil and groundwater. Lead compounds can be converted to other lead compounds in the environment; however, lead is an element and cannot be destroyed. Because lead does not degrade, previous uses of lead and its releases into the ambient air result in high concentrations of lead that persist in the environment.

Lead is a persistent pollutant, and once deposited out of the air, lead can subsequently be resuspended in the ambient air. In addition, because of the persistence of lead, lead emissions contribute to, in sufficient concentrations across multiple pathways, cause impacts for some years into the future (73 FR 66971). This cycling of lead in the environment means people can be exposed to lead that was emitted just yesterday or emitted years ago (EPA, 2014). Furthermore, lead emitted into the air is predominantly in particulate form, which can be transported long or short distances depending on particle size (73 FR 66971).

Thus, lead can affect communities surrounding lead melting facilities as well as those not immediately adjacent to these facilities. Reducing the ambient lead concentration limit to 0.100 $\mu g/m^3$ will minimize lead emissions from lead melting facilities from directly inhaled lead particulates, and further reducing the accumulation of surface dust and lead in the soil that can over time re-enter the air through re-suspension.

HEALTH EFFECTS OF LEAD

Lead is classified as a "criteria pollutant" under the federal Clean Air Act. The OEHHA also identifies it as a carcinogenic TAC. Chronic health effects include problems such as nervous and reproductive system disorders, neurological and respiratory damage, cognitive and behavioral changes, and hypertension. Exposure to lead can also potentially increase the risk of contracting cancer. Lead is a multipathway toxic air contaminant. It can enter the body through inhalation or ingestion. Exposure to lead emitted into the ambient air (air-related lead) can occur directly by inhalation, or indirectly by ingestion of lead-contaminated food, water or other materials including dust and soil. These exposures occur as lead emitted into the ambient air is distributed to other environmental media such as water or land. The emissions can contribute to human exposures via indoor and outdoor dusts, outdoor soil, and food and drinking water, as well as inhalation of air (73 FR 66971). Multiple studies of the relationship between lead exposure and blood lead in children have shown young children's blood lead levels to reflect lead exposures from ambient air

levels, as well as exposure due to lead in surface dust (EPA, 2014). Young children are especially susceptible to the effects of environmental lead because their bodies accumulate lead more readily than do those of adults, and because they are more vulnerable to certain biological effects of lead including learning disabilities, behavioral problems, and deficits in IQ.

JUSTIFICATION FOR LOWERING AMBIENT AIR TO 0.100 µg/m^3

SCAQMD staff is proposing that the final ambient concentration be set at 0.100 µg/m^3 for Proposed Amended Rule 1420, consistent with the ambient lead concentration limit in Rules 1420.1 and 1420.2. During the rulemaking for Rules 1420.1 and 1420.2, SCAQMD staff provided the justification for an ambient concentration lead limit of 0.100 µg/m^3. As discussed below, the SCAQMD staff relied on the EPA's 2008 review of the Lead NAAQS and the EPA's 2016 Final Decision to Retain the National Ambient Air Quality Standards (NAAQS) for Lead (Pb) (EPA, 2016) to retain the current Lead NAAQS as the basis for establishing the 0.100 µg/m^3 ambient lead limit. An ambient concentration limit of 0.100 µg/m^3 is supported by scientific information presented during the development of the 2008 Lead NAAQS and the EPA's Final Decision to Retain the Current Lead NAAQS. The following discusses the general approach and key assumptions that were the basis of EPA's evaluation of the Lead NAAQS. As explained in more detail below, establishing an ambient concentration limit of 0.100 µg/m^3, the SCAQMD made policy decisions that are more protective of human health than the choices made by EPA in proposing to retain an ambient concentration limit of 0.15 µg/m^3. In particular, the SCAQMD staff proposes a more prophylactic approach for protecting the health of children, particularly those under five years of age, that live in communities near lead metal facilities in the Basin.

Establishing the 2008 Lead NAAQS and EPA's 2016 Final Decision to Retain the Current Lead NAAQS

The 2008 Lead NAAQS and EPA's 2016 Final Decision to Retain the Current Lead NAAQS reflect an evidenced-based framework that took into consideration the much-expanded evidence on the neurocognitive health effects of lead in children. EPA focused on the developmental neurotoxicity in children, with IQ decrement as the risk metric. After examining the wide variety of health endpoints associated with lead exposures, EPA concluded that "there is general consensus that the developing nervous system in young children is the most sensitive and that neurobehavioral effects (specifically neurocognitive deficits), including IQ decrements, appear to occur at lower blood levels than previously believed (i.e., at levels <10 µg/dL). (EPA, 2008)

In establishing the lead NAAQS, the EPA used an evidence-based framework, referred to as the air-related IQ loss framework, which shifts focus from identifying an appropriate target population mean blood lead level and instead focuses on the magnitude of effects of air-related lead on neurocognitive functions such as IQ loss (73 FR 66971). The two primary inputs to EPA's evidence-based, air-related IQ loss framework are air-to blood ratios and concentration-response (C-R) functions for the relationship between blood lead and IQ response in young children. The framework derives estimates of mean air-related IQ loss through multiplication of the following factors:

- Ambient lead standard level (µg/m^3),

- Air-to-blood ratio in terms of µg/dL blood lead per µg/m^3 air concentration, and
- Slope for the concentration-response (C-R) function in terms of points IQ decrement per µg/dL blood lead.

Application of the framework also entailed consideration of an appropriate level of protection from air-related IQ loss to be used in conjunction with the framework, such as an average of level of IQ loss and an adequate margin of safety. The framework provides for estimation of a mean air-related IQ decrement for young children in the high end of the national distribution of air-related exposures. It does so by focusing on children exposed to air-related lead in those areas with elevated air lead concentrations equal to specific potential standard levels. (EPA, 2014).

Air-to-Blood Level Ratio

The air-to-blood level ratio represents the relationship between the lead concentration in the air measured in µg/m^3 and the associated blood lead level measured in µg/deciliter (µg/dL). A ratio of 1:5 means that 1 µg/m^3 increase of lead in the air will result in a blood lead level of 5 µg/dL for a given population. In the 2008 Lead NAAQS and EPA's 2016 Rule to Retain the Current Lead NAAQS, EPA concluded that for each µg/m^3 increase of lead in air, children's blood lead levels increase by 5–10 µg/dL, i.e., the air-to-blood ratio ranged from 1:5 to 1:10. EPA selected an air-to-blood ratio of 1:7 "as a generally central value within this range." (73 FR 67002-67004).

Concentration-Response Functions

In establishing the 2008 Lead NAAQS and the EPA's 2016 Final Decision to Retain the Current Lead NAAQS, EPA considered the evidence regarding the quantitative relationships between IQ loss and blood lead levels. EPA focused on those concentration-response functions that are based on blood lead levels which most closely reflect today's population of children in the U.S., although recognizing that the evidence does not include analyses involving mean blood lead levels as low as the mean blood lead level for today's children. EPA identified four analyses that have a mean blood lead level closest to today's mean for U.S. children; these yielded four slopes ranging from -1.56 to -2.94, with a median of -1.75 IQ points per µg/dL. In addition, the Administrator determined that it is appropriate to give more weight to the central estimate for this set of functions, which is the median of the set of functions, and not to rely on any one function. (73 FR 67003-67004)

IQ Decrement

EPA also concluded that the concentration-response relationship between blood level and IQ loss is nonlinear, with greater incremental IQ loss occurring at lower blood lead levels. Accordingly since studies show that the average lead blood levels for children in the United States has decreased over the years, and that even at these lower levels there are significant neurocognitive impacts such as IQ loss, the analyses of children with blood lead levels closest to those of children in the United States today were most relevant. In selecting the lead NAAQS, the EPA Administrator concluded that, "an air-related IQ loss of 2 points should be used in conjunction with the evidence-based framework in selecting an appropriate level for the standard." (73 FR 67002 - 67005)

Establishing the 2008 Lead NAAQS

Table 1-1 below summarizes the estimates of air-related mean IQ loss for children exposed to various ambient air lead concentrations and was used in establishing the 2008 Lead NAAQS. As previously discussed, EPA's evidence-based air-related IQ loss framework found that the air-to-

blood ratio ranged from 1:10 to 1:5 and the EPA Administrator selected a 1:7 air-to-blood ratio as a generally central value within this range. Based on an air-to-blood ratio of 1:7 and use of a mean air-related IQ loss of no more than 2 points, EPA selected an ambient lead concentration limit of 0.15 µg/m^3 (see highlighted box in Table 1-1). At this level, children's IQ levels would be decreased by 1.8 points, assuming a 1:7 air to blood ratio. At an ambient lead concentration of 0.10 µg/m^3, children's IQ level would be decreased by 1.2 points using the same 1:7 air to blood level ratio assumption.

Table 1-1
Estimates of Air-Related Mean IQ Loss for the Subpopulation of Children Exposed at the Level of the Standard – Highlighting an Ambient Lead Concentration Limit of 0.150 µg/m^3 (Source: 73 FR 67005 and 67006)

Potential level for standard (µg/m^3)	Air-related mean IQ loss (points) for the subpopulation of children exposed at level of the standard		
	IQ loss estimate is based on median slope of 4 C–R functions with blood Pb levels closer to those of today's U.S. children (range shown for estimates based on lowest and highest of 4 slopes)		
	Air-to-blood ratio		
	1:10	1:7	1:5
0.50	>5*	>5*	4.4 (3.9–7.4)
0.40		4.9 (4.4–8.2)	3.5 (3.1–5.9)
0.30	5.3 (4.7–8.8)	3.7 (3.3–6.2)	2.6 (2.3–4.4)
0.25	4.4 (3.9–7.4)	3.1 (2.7–5.1)	2.2 (2.0–3.7)
0.20	3.5 (3.1–5.9)	2.5 (2.2–4.1)	1.8 (1.6–2.9)
0.15	2.6 (2.3–4.4)	1.8 (1.6–3.1)	1.3 (1.2–2.2)
0.10	1.8 (1.6–2.9)	1.2 (1.1–2.1)	0.9 (0.8–1.5)
0.05	0.9 (0.8–1.5)	0.6 (0.5–1.0)	0.4 (0.4–0.7)
0.02	0.4 (0.3–0.6)	0.2 (0.2–0.4)	0.2 (0.2–0.3)

*For these combinations of standard levels and air-to-blood ratios, the appropriateness of the C–R function applied in this table becomes increasingly uncertain such that no greater precision than ">5" for the IQ loss estimate is warranted.

At a level of 0.15 µg/m^3, the Administrator recognized that use of a 1:10 ratio produces an estimate greater than 2 IQ points and use of a 1:5 ratio produces a lower IQ loss estimate. Given the uncertainties and limitations in the air-related IQ loss framework, the Administrator decided to place primary weight on the results from this central estimate (1:7 ratio) rather than estimates derived using air-to-blood ratios either higher or lower than this ratio. (73 FR 67005).

The 2014 Policy Assessment concluded that, "The limited amount of new information available in this review has not appreciably altered the scientific conclusions reached in the last review regarding relationships between Pb in ambient air and Pb in children's blood or with regard to the range of ratios." As a result, the EPA Administrator is recommending to maintain the central estimate of 1:7 rather than estimates derived using higher air-to-blood ratios.

Selecting a 0.100 µg/m^3 Ambient Lead Limit for PAR 1420

PAR 1420 requires an ambient lead concentration limit of 0.150 µg/m^3 and then to 0.100 µg/m^3 effective January 1, 2021. This is a policy decision that is supported by the same evidence-based framework used to establish the 2008 Lead NAAQS and EPA's 2016 Rule to Retain the Current Lead NAAQS.

In developing the 2008 Lead NAAQS, EPA recognized that policy judgments must be made regarding the level of health protection and margin of safety. The available evidence supports a range of choices in setting that level. In reviewing all of the scientific information through the

development of the 2008 Lead NAAQS and the 2015 Proposed Rule to Retain the Current Lead NAAQS, the EPA Administrator made a series of policy decisions. For example, the Administrator used a "central value" between 1:10 and 1:15 to represent the air-to-blood lead ratio and a decrement of 2 IQ points, all within the evidence-based framework for establishing a "national" standard for ambient lead. The 2014 Policy Assessment for Review of the Lead NAAQS maintained the same approach and range of ratios stating that, "The limited amount of new information available in this review has not appreciably altered the scientific conclusions reached in the last review regarding relationships between lead in ambient air and lead in children's blood or with regard to the range of ratios. The currently available evidence continues to indicate ratios relevant to the population of young children in U.S. today, reflecting multiple air-related pathways in addition to inhalation, to be generally consistent with the approximate range of 1:5 to 1:10 given particular attention in the 2008 NAAQS decision, including the "generally central estimate" of 1:7." In doing so, the EPA Administrator recognized that:

> "…there are currently no commonly accepted guidelines or criteria within the public health community that would provide a clear basis for reaching a judgment as to the appropriate degree of public health protection that should be afforded to protect against risk of neurocognitive effects in sensitive populations, such as IQ loss in children." (73 FR 67004).

EPA further acknowledged that "different public health policy judgments could lead to different conclusions regarding the extent to which the current standard provides projection of public health with an adequate margin of safety." (EPA, 2014)

The NAAQS is a national standard for lead which applies uniformly to all parts of the United States, whereas PAR 1420 is a source-specific rule that regulates specific lead processing facilities. By establishing an ambient lead limit of 0.100 $\mu g/m^3$, and implementing other requirements in PAR 1420, the rule amendment is designed to minimize the release of point source and fugitive lead emissions from lead processing facilities, thereby minimizing the accumulation of lead on soil surface and in soil dust, which will potentially be more health protective. The proposed level considers communities with children living in close proximity to lead processing facilities, and it provides additional protection for the population most at-risk from lead emissions: pre-school children under the age of five. EPA has specifically recognized the significant health risks posed in this instance: "…situations of elevated exposure, such as residing near sources of ambient lead can also contribute to increased blood lead levels and increased risk of associated health effects from air-related lead." (73 FR 66976)

As discussed below, the EPA Administrator made a series of policy decisions based on evidenced-based air-related IQ loss framework. Two policy decisions that the SCAQMD staff has focused on are the air-to-blood lead ratio and the IQ decrement, particularly as these issues relate to PAR1420 as a source-specific rule. In addition, as discussed below, SCAQMD staff further considered the vulnerability of children to lead and is recommending a more preventative approach with an ambient lead limit of 0.100 $\mu g/m^3$ to provide greater health protection for communities, and more specifically for young children, that live near lead processing facilities.

1:10 Air-to-Blood Lead Ratio

An air-to-blood lead ratio of 1:10 would support a more protective standard for children (CHPAC, 2008b). As discussed above, EPA's evidence-based air-related IQ loss framework found that the air-to-blood lead ratio ranges from 1:10 to 1:5, and the EPA Administrator selected a 1:7 air-to-blood ratio as a "generally central value within this range." (73 FR 67005 and 67006). As we now explain, the ambient lead concentration limit of 0.100 $\mu g/m^3$ under PR 1420.2 is supported by EPA's evidence-based air-related IQ loss framework, assuming EPA's judgment of air-related IQ loss of 2 points and an air-to-blood ratio of 1:10. The SCAQMD's policy decision to use an air-to-blood ratio of 1:10 is also supported by EPA's evidence based air-related IQ loss data and is even more health protective, particularly for young children living near lead melting facilities.

An air-to-blood ratio of 1:10 is supported by comments made by scientists, physicians, and researchers. During the development of the 2008 Lead NAAQS, EPA received scientific recommendations from the Clean Air Scientific Advisory Committee (CASAC), a federal advisory committee independently chartered to provide extramural scientific information and advice to the EPA Administrator and other officials of the EPA[1]. The CASAC recommended that EPA consider an air-to-blood ratio ''closer to 1:9 to 1:10 as being most reflective of current conditions.'' (73 FR 67001). The higher attained blood lead concentrations that are modeled with a ratio of 1:10 would support a more protective standard for children. (CHPAC, 2008b). Similar to the advice from CASAC, many commenters, including EPA's Children's Health Protection Advisory Committee, the Northeast States For Coordinated Air Use Management (NESCAUM) and the Michigan Department of Environmental Quality recommended that EPA consider ratios higher than the upper end of the range used in the proposal (1:7), such as values on the order of 1:9 or 1:10 or somewhat higher. They also rejected the lower ratios used in the proposal as being inappropriate for application to today's children. Commenters supporting such higher ratios cited ratios resulting from a study noted by CASAC (Schwartz and Pitcher, 1989), as well as others by Hayes et al. (1994) and Brunekreef et al. (1983) They also cited air-to- blood ratio estimates from the exposure/ risk assessment (73 FR 67001). The exposure/risk assessment evaluated the quantitative human exposure and health risk assessments in order to inform EPA during the 2008 review of the NAAQS for lead.

As shown in Table 1-2, when EPA's same evidence-based framework is employed using an air-to-blood ratio of 1:10, with a loss of less than 2 IQ points, the corresponding ambient limit of 0.100 $\mu g/m^3$ is necessary to protect public health.

[1] The CASAC for the 2008 NAAQS is made up of the following members: Rogene Henderson, Ph.D., Chair, Clean Air Scientific Advisory Committee, Scientist Emeritus, Lovelace Respiratory Research Institute; Donna Kenski, Ph.D., Director of Data Analysis, Lake Michigan Air Directors Consortium, (LADCO); Ellis Cowling, Ph.D., University Distinguished Professor At-Large, Emeritus, North Carolina State University; Armistead (Ted) Russell, Ph.D., Gerogia Power, Distinguished Professor of Environmental Engineering, Georgia Institute of Technology; James D. Crapo, M.D., Professor, Department of Medicine, National Jewish Medical and Research Center; Jonathan M. Samet, M.D., Professor and Chairman, Department of Epidemiology, Bloomberg School of Public Health, John Hopkins University; Douglas Crawford-Brown, Ph.D., Director, Institute for Environment; and Professor, Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill

Table 1-2
Estimates of Air-Related Mean IQ Loss for the Subpopulation of Children Exposed at the Level of the Standard – Highlighting an Ambient Lead Concentration Limit of 0.100 µg/m^3 (Source: 73 FR 67005 and 67006)

Potential level for standard (µg/m³)	Air-related mean IQ loss (points) for the subpopulation of children exposed at level of the standard		
	IQ loss estimate is based on median slope of 4 C–R functions with blood Pb levels closer to those of today's U.S. children (range shown for estimates based on lowest and highest of 4 slopes)		
	Air-to-blood ratio		
	1:10	1:7	1:5
0.50	>5*	>5*	4.4 (3.9–7.4)
0.40		4.9 (4.4–8.2)	3.5 (3.1–5.9)
0.30	5.3 (4.7–8.8)	3.7 (3.3–6.2)	2.6 (2.3–4.4)
0.25	4.4 (3.9–7.4)	3.1 (2.7–5.1)	2.2 (2.0–3.7)
0.20	3.5 (3.1–5.9)	2.5 (2.2–4.1)	1.8 (1.6–2.9)
0.15	2.6 (2.3–4.4)	1.8 (1.6–3.1)	1.3 (1.2–2.2)
0.10	1.8 (1.6–2.9)	1.2 (1.1–2.1)	0.9 (0.8–1.5)
0.05	0.9 (0.8–1.5)	0.6 (0.5–1.0)	0.4 (0.4–0.7)
0.02	0.4 (0.3–0.6)	0.2 (0.2–0.4)	0.2 (0.2–0.3)

*For these combinations of standard levels and air-to-blood ratios, the appropriateness of the C–R function applied in this table becomes increasingly uncertain such that no greater precision than ''>5'' for the IQ loss estimate is warranted.

Population Significance of Loss of IQ Points

Communities that are near metal melting facilities can suffer a significant loss of IQ points. In its July 2008 advice to EPA, CASAC commented that ''a population loss of 1–2 IQ points is highly significant from a public health perspective.'' CASAC further emphasized its view that an IQ loss of 1–2 points should be ''prevented in all but a small percentile of the population—and certainly not accepted as a reasonable change in mean IQ scores across the entire population.'' Recommendations from several commenters, including the American Academy of Pediatrics (AAP) and state health agencies commenting on this issue, generally agreed with the view emphasized by CASAC that air-related IQ loss of a specific magnitude, such as on the order of 1 or 2 points, should be prevented in a very high percentage (e.g., 99.5%) of the population. (73 FR 67000).

The issue of individual-level versus population-level risk also pertains to the implications of the magnitude of decrease in cognitive function or increase in behavioral problems per unit increase in blood lead level. Although fractional changes in Full Scale Intelligence Quotient (FSIQ), memory, or attention may not be consequential for an individual, they may be consequential on a population level. At that level, small lead-associated decreases in cognitive function could increase the number of individuals at additional risk of educational, vocational, and social failure. It could also decrease the number of individuals with opportunities for academic and later-life success. (EPA, 2013) Small shifts in the population mean IQ can be highly significant from a public health perspective. Such shifts could translate into a larger proportion of the population functioning at the low end of the IQ distribution, as well as a smaller proportion of the population functioning at the high end of the distribution. (EPA, 2013). Additionally, small lead-associated increases in the population mean blood pressure could result in an increase in the proportion of the population with hypertension that is significant from a public health perspective. (EPA, 2013)

Ambient Limit of 0.100 µg/m^3 is More Health Protective for Children

Establishing an ambient limit of 0.100 µg/m^3 will be more protective of children that live around facilities subject to PAR 1420, particularly younger children. Lead poisoning is a preventable disease. No safe blood level of lead in children has been identified. (CDC, 2012a). Preventing lead exposure rather than responding after the exposure has taken place is consistent with recommendations from the Centers for Disease Control and Prevention's (CDC) Advisory Committee for Childhood Lead Poisoning Prevention, which recommends that the CDC as well as other local, state, and federal agencies "shift priorities to primary prevention." (CDC, 2012b).

Neurocognitive health effects in young children are recognized as the most sensitive endpoint associated with blood lead concentrations. Evidence continues to indicate that neurocognitive effects in young children may not be reversible and may have effects that persist into adulthood. (EPA, 2014). In addition, in a letter to EPA in 2008 the Academy of Pediatrics stated that, "No study has determined a level of lead in blood that does not impair child cognition. Further, the effects are long-lasting. Damage to a child's developing brain from lead is not reversible." (AAP, 2008). Similarly, EPA states in its 2013 Integrated Science Assessment for Lead that, "Evidence suggests that some lead-related cognitive effects may be irreversible and that the neurodevelopmental effects of lead exposure may persist into adulthood." (EPA, 2013).

Among the wide variety of health endpoints associated with lead exposures, there is general consensus that the developing nervous system in children is among the sensitive-- if not the most sensitive-endpoints. (73 FR 66976). Multiple epidemiologic studies conducted in diverse populations of children consistently demonstrate the harmful effects of lead exposure on cognitive function. The effects can be measured by IQ decrements, decreased academic performance and poorer performance on tests of executive function. (EPA, 2013). Lead-associated decline of several points might be sufficient to drop that individual into the range associated with increased risk of educational, vocational, and social failure. (EPA 2008). In addition, a study found that in a group of 7-year old children exposed to lead before the age of 3 years old, IQ continued to fall, even after the blood lead level had declined. (AAP, 2008; Chen et al, 2005).

Compounding the effects of lead on developing children are studies indicating that children are more vulnerable than adults when exposed to lead. Air-to-blood ratios are generally higher for children than those for adults, and they are higher for young children than older children. (EPA, 2014). Pre-school children or children under five years old are the most vulnerable to exposure and adverse health effects, and thereby represent the greatest at-risk population. Higher blood lead levels in pre-school aged children compared to the rest of childhood are related to behaviors that increase environmental exposure, such as hand-to-mouth activity. Children may have increased exposure to lead compared with adults because of children's behaviors and activities (including increased hand-to-mouth contact, crawling, and poor hand-washing), differences in diets, and biokinetic factors (absorption, distribution, metabolism, and excretion). (EPA, 2013).

In addition, younger children absorb substantially more lead than adults, especially children below 2 years of age. These children have a faster metabolic rate, resulting in a proportionately greater daily intake of lead through food. They also have a less developed blood-brain barrier and therefore greater neurological sensitivity; a faster resting inhalation rate; and a rapidly developing nervous system. (OEHHA, 2009). As previously referenced, multiple studies of the relationship

between lead exposure and blood lead in children have shown young children's blood lead levels reflect lead exposures from ambient air levels as well as exposure due to lead in surface dust. (EPA, 2014).

Blood lead levels are extensively used as an index or biomarker of exposure by national and international health agencies, as well as in epidemiological and toxicological studies of lead health effects and dose-response relationships. Blood lead concentrations, even those below 10 µg/dL, are inversely associated with children's IQ scores at three and five years of age, and associated declines in IQ are greater at these concentrations than at higher concentrations. (Canfield, et al, 2003). Based on a growing body of studies concluding that blood lead levels <10 µg/dL harm children, the Centers for Disease Control and Prevention (CDC) Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) recommends a reference level of 5 µg/dL to identify children with blood lead levels that are much higher than most children's levels. This level is based on the 97.5th percentile of the National Health and Nutrition Examination Survey (NHANES)'s blood lead distribution in children. This recommendation is grounded on the weight of evidence that includes studies with a large number and diverse group of children with low blood lead levels and associated IQ deficits. Effects at blood lead levels < 10 µg/dL are also reported for other behavioral domains, particularly attention-related behaviors and poorer academic achievement. Furthermore, new findings suggest that the adverse health effects of blood lead levels at less than 10 µg/dL in children extend beyond cognitive function to include cardiovascular, immunological, and endocrine effects. (CDC, 2012a).

The SCAQMD staff believes that the CDC's action to establish a reference level of 5 µg/dL, in lieu of the previous "level of concern" of 10 µg/dL, further substantiates the policy decision to establish an ambient lead concentration limit of 0.100 µg/m^3. EPA's 2014 Policy Assessment states that, "The CDC decision, while emphasizing the critical importance of primary prevention of lead exposure, provides no new guidelines or criteria with regard to the significance of specific IQ decrements…" (EPA, 2014). However, the Academy of Pediatrics cautioned against focusing solely on IQ loss or gain stating, "There are ramifications of lead exposure on other endpoints that have societal and individual implications of great importance." In addition, CASAC member Dr. Susan Korrick, stated that, "the discussion of health policy judgments needs to be carefully considered in light of the fundamental and far reaching public health value of childhood cognitive and neurobehavioral health." (CASAC, 2013).

EPA's Children's Health Protection Advisory Committee[2] (CHPAC) is a body of external researchers, academicians, health care providers, environmentalists, state and tribal government employees, and members of the public who advise EPA on regulations, research, and communications related to children's health. CHPAC stated in a letter to USEPA Administrator McCarthy that "lead affects children's IQs at exposure levels appreciably lower than recognized…" (CHPAC, 2015). In addition, in a letter to the Administrator on June 16, 2008 regarding the Proposed Rulemaking for the National Ambient Air Quality Standards for Lead, CHPAC stated there is clear scientific evidence to support an ambient lead concentration of 0.100

[2] The legal authority for CHPAC is the Federal Advisory Committee Act (FACA), 5 USC App 2. CHPAC acts in the public interest and supports EPA in performing its duties and responsibilities under Executive Order 13045 of April 21, 1997 (62 Fed Reg 19885; April 23, 1997). CHPAC provides advice on topics such as air and water pollution regulations, chemical safety programs, risk assessment policies, and research, which reflect the wide ranging environmental issues which affect the health of children.

$\mu g/m^3$. The letter specifically referenced the special relevance of such a standard to children because there is a steeper dose-response curve for children's neurological effects at lower levels of exposure. This is due to the fact that a higher ratio of lead air-to-blood lead ratios has been observed in children at lower air lead concentrations. (CHPAC, 2008b).

Summary Conclusion

An ambient lead concentration limit of 0.100 μg/m3 will be more health protective for communities that live around metal melting facilities, particularly younger children. There is substantial scientific justification provided through EPA's development of the 2008 Lead NAAQS and EPA's Final Decision to Retain the Current Lead NAAQS evidence-based framework to support the policy decision to establish an ambient limit of 0.100 $\mu g/m^3$. The above discussion provides a description of EPA's evidence-based framework to establish the 2008 Lead NAAQS of 0.15 $\mu g/m^3$ and key policy judgments made regarding the level of health protection and margin of safety for the national standard. As previously stated, there are currently no commonly accepted guidelines or criteria within the public health community that would provide a clear basis for reaching a judgment as to the appropriate degree of public health protection that should be afforded to protect against risk of neurocognitive effects in sensitive populations, such as IQ loss in children." (73 FR 67004). As a regional air agency, developing a source-specific-rule for lead processing facilities, the SCAQMD staff is recommending policy decisions that are more health protective for communities, particularly young children that are affected by lead emissions from lead processing facilities that will be regulated under PAR 1420. The above discussion substantiates the policy decision to establish an ambient lead concentration limit of 0.100 $\mu g/m^3$, with some key points of the above discussion highlighted below:

- No safe blood level of lead in children has been identified (CDC, 2012a)
- The developing nervous system in children is among the sensitive-- if not the most sensitive-endpoints. (73 FR 66976)
- Lead affects children's IQs at exposure levels appreciably lower than recognized. (CHPAC, 2105)
- Pre-school children or children under five years old are the most vulnerable to exposure and adverse health effects, and thereby represent the greatest at-risk population. (EPA, 2013)
- Younger children absorb substantially more lead than adults, especially children below 2 years of age. (OEHHA, 2009)
- No study has determined a level of lead in blood that does not impair child cognition. Further, the effects are long-lasting. Damage to a child's developing brain from lead is not reversible. (AAP, 2008)
- CASAC commented that ''a population loss of 1–2 IQ points is highly significant from a public health perspective.'' (EPA, 2008)
- Air-to-blood ratio of 1:10 is also supported by EPA's evidence based air-related IQ loss data and is even more health protective (CHPAC, 2008b)

Based on all the foregoing, the evidence supports the District's policy decision to establish a final lead limit in ambient air at 0.100 $\mu g/m^3$.

CHAPTER 2: SUMMARY OF PROPOSED AMENDED RULE 1420

OVERALL APPROACH

PROPOSED AMENDED RULE 1420

OVERALL APPROACH

PAR 1420 establishes requirements for lead processing facilities, which include compliance with ambient air lead concentration limits, point source control requirements, housekeeping and maintenance requirements, and source testing. Many of the provisions in PAR 1420 are based on similar types of provisions for Rules 1420.1 and 1420.2. Although ambient monitoring is not required as a core requirement, there are triggers where a facility may be required to conduct ambient lead monitoring as discussed in more detail below.

PROPOSED AMENDED RULE 1420

PAR 1420 will reduce lead emissions generated from lead smelters, foundries, smaller lead acid battery manufacturers and recyclers, lead oxide, brass, and bronze producers, and metal melting facilities. The purpose of PAR 1420 is to reduce point and fugitive lead emissions reduce public health impacts by reducing the exposure to lead, and to help maintain attainment of the NAAQS for lead. As a result, the rule proposes requirements for point source lead emission controls and an ambient air lead concentration limit. Fugitive lead emissions are addressed through housekeeping and maintenance activity requirements, and total enclosures of areas where lead processing operations and associated processes are conducted. Additionally, periodic source testing, capture efficiency testing, conditional ambient air monitoring, and reporting and recordkeeping requirements are also being proposed to ensure continuous compliance. Lead processing facilities that exceed the ambient air lead concentration limits of PAR 1420 will be subject to additional requirements to mitigate an exceedance of the ambient lead concentration limit established in PAR 1420.

Applicability

PAR 1420 applies to metal melting facilities and lead processing facilities, as defined in the rule, in the SCAQMD that process materials that contain greater than 0.05% lead content by weight. Facilities using materials with less than or equal to 0.05% lead content by weight are not subject to any requirements of the rule. Based on SCAQMD staff analysis of compliance and permitting data, there are approximately 107 facilities in the District that meet the applicability requirements of the proposed rule amendment. The larger emitters such as large lead-acid battery recyclers and the metal melting facilities that melt greater than 100 tons of lead per year were addressed under Rules 1420.1 and 1420.2 respectively. All provisions of PAR 1420 will apply to lead processing facilities that process greater than 2 tons of lead per year of raw materials that contain greater than 0.05 percent lead by weight. However, owners or operators that process less than 2 tons of lead per year will be subject to fewer requirements – ambient concentration limits, housekeeping and recordkeeping. A breakdown of applicable facilities by industry classification is provided in Table 2-1 below.

The universe of facilities affected by PAR 1420 was determined by review of the SCAQMD's permitting databases, which allowed staff to identify industry categories based on North American Classification Systems (NAICS) codes. In addition, for facilities in each NAICS category equipment lists were identified based on both basic equipment and control equipment.

Table 2-1: Types of Facilities Subject to PAR 1420

NAICS Code	Facility Type	# of Facilities
331314	Secondary Smelting and Alloying of Aluminum	1
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	1
331511	Iron Foundries	2
331524	Aluminum Foundries (except Die-Casting)	4
331529	Other Nonferrous Metal Foundries (except Die-Casting)	5
332813	Electroplating, Plating, Polishing, Anodizing and Coloring	8
334413	Semiconductor and Related Device Manufacturing	1
334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing	70
334419	Other Electronic Component Manufacturing	9
336411	Aircraft Manufacturing	1
336413	Developing and Manufacturing of Prototypes for Aircraft Parts and Auxiliary Eqpt.	1
336419	Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	2
423500	Metal and Mineral Merchant Wholesalers	1
423930	Recyclable Material Merchant Wholesalers	1
Total Number of Facilities		107

Definitions

PAR 1420 includes definitions of the following terms used in the proposed rule. Please refer to subdivision (c) of PAR 1420 for the definitions:

- Bag Lead Detection System
- Capture Velocity
- Duct Section
- Dust Suppressant
- Emission Collection System
- Emission Control Device
- Emission Point
- Foundry
- Fugitive Lead-Dust Emissions
- Lead

- Lead-Acid Battery Manufacturer
- Lead-Acid Battery Recycler
- Lead-Oxide Producer
- Lead Point Source
- Lead Processing Facility
- Maintenance Activity
- Metal
- Metal Melting Facility
- Primary Lead Smelter
- Ringelmann Opacity
- Secondary Lead Smelter
- Slag
- Smelting
- Smelting Furnace
- Total Enclosure

Requirements

Subdivision (d) and subdivisions (f) through (j) of PAR 1420 establish the "core" requirements including ambient lead concentration limits, point source emissions controls, total enclosures, housekeeping measures, air pollution control device maintenance activity requirements, and source testing. Subdivision (e) includes requirements for conditional ambient air monitoring. Subdivision (k) specifies recordkeeping requirements and subdivision (l) includes exemptions.

Subdivision (d) – Ambient Air Lead Concentration Limit

Upon adoption of PAR 1420 until December 31, 2020, facilities subject to PAR 1420 will be required to meet an ambient air lead concentration limit of 0.150 $\mu g/m^3$ averaged over any 30 consecutive days. On and after January 1, 2021, facilities subject to PAR 1420 will not be allowed to discharge into the atmosphere emissions which contribute to ambient air concentrations of lead that exceed 0.100 $\mu g/m^3$ averaged over any 30 consecutive days. Measurements may be obtained and recorded from an ambient air lead monitor installed by a facility or one that is installed by the District. The visible emission standard will be retained.

Subdivision (e) – Executive Officer Determination to Conduct Ambient Air Monitoring

Rules 1420.1 and 1420.2 require ambient lead monitoring for all facilities affected by those rules. Since PAR 1420 applies to smaller lead emitting sources, PAR 1420 does not require ambient lead monitoring as a base requirement. Under PAR 1420, ambient lead monitoring is only required if a facility triggers specified criteria. The basis of the criteria is to identify those PAR 1420 facilities where the SCAQMD staff has information that there is, or there is the potential for exceedance of the ambient lead concentration. A facility that exceeds an ambient air lead concentration limit of 0.150 $\mu g/m^3$ averaged over any 30 consecutive days, or exceeds the lead point source emission limit based on two or more source tests over a rolling 36-month period, may be notified by the Executive Officer that ambient air monitoring may be required. Within 30 days of the date of initial notification by the Executive Officer, the owner or operator may provide any additional information that the triggers have not been met. Prior to final determination, the Executive Officer will consider any additional information provided by the owner operator, any emission data, site visits, and findings from investigation of surrounding sources. The Executive Officer will notify

the owner or operator in writing of the final determination. If ambient lead monitoring is required by the Executive Officer, the owner or operator will be required to prepare and submit a Lead Ambient Air Monitoring and Sampling Plan pursuant to subdivision (i) – Ambient Monitoring and Sampling Requirements for review and approval by the Executive Officer. Information required in the plan includes:

- Source test results of all lead point sources;
- Map of facility identifying the location of all lead emission sources, air pollution control devices, stacks, enclosures, openings of enclosures, storage of lead-containing materials, roadways where vehicles carrying lead-containing materials travel within the facility, vehicle egress and ingress locations, the property line of the facility, the fence line of the facility if it differs from the property line of the facility, and any areas within the property line of the facility that are publicly accessible; and
- Number and locations for sampling sites that meet the requirements of paragraph (e)(2).

PAR 1420 facilities subject to Lead Ambient Air Monitoring and Sampling requirements will be required to collect and analyze ambient air lead samples to determine compliance with the ambient air quality lead concentration limits of the rule. This subdivision provides the requirements for submittal of an ambient air monitoring and sampling plan, the number of monitors, placement of monitors, and installation of monitors.

No later than 90 days after approval of a Lead Ambient Air Monitoring and Sampling Plan, facilities will be required to install monitors and conduct ambient air lead monitoring and sampling. Samples must be collected from a minimum of two sites with locations of the sampling sites based on maximum expected ground level lead concentrations, at or beyond the property line, as determined by Executive Officer-approved air dispersion modeling calculations and emission estimates from all lead point sources and fugitive lead-dust sources, and other factors including, but not limited to, population exposure and seasonal meteorology.

The Executive Officer may require a facility to relocate existing monitors or install additional monitors to those required as specified above in order to measure ambient air lead concentrations at locations that may contribute to the exceedance of an ambient air lead concentration limit specified in subdivision (d). The basis for relocating existing monitors or requiring installation of additional monitors shall be based on information showing:

- A new or existing lead source that was not previously identified or fully disclosed;
- An increase in lead emissions from an existing source where existing monitors are not capturing the potential ambient air lead concentration; or
- Inability of the existing monitors to capture the maximum expected ground level lead concentrations.

A facility that is required to conduct ambient air monitoring will be required to collecting a valid 24-hour, midnight-to-midnight sample at all sites based on a sampling frequency of 1 in 6 days. PAR 1420 requires that 24-hour lead samples be collected and requires that samples be collected midnight-to-midnight at all sites, however an alternative 24 hour sampling schedule may be allowed based on approval of the Executive Officer. Approval of an alternative schedule shall be granted if it is demonstrated to the Executive Officer that the alternative schedule is adequate to routinely collect valid 24-hour samples, as defined in the rule, and is conducted using the sampling

methods referenced in paragraph (e)(6). Facilities will also be required to continuously monitor wind speed and direction as described in the approved plan for the ambient air quality monitoring system at all times to supplement data analysis of the samples collected. Approval shall be based on guidelines for wind and speed direction monitoring as provided in the "*SCAQMD Rule 403 Implementation Handbook – Chapter 6: On-Site Wind Monitoring Equipment*," or other relevant EPA reference documents such as the "*Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV, Meteorological Measurements*."

Only personnel approved by the Executive Officer, or facility personnel trained and certified to conduct ambient air monitoring demonstrated through successful completion of a course offered or approved by the Executive Officer will be allowed to conduct ambient air quality monitoring. Monitoring and sampling equipment shall be operated and maintained in accordance with U.S. EPA-referenced methods.

Facilities required to conduct ambient monitoring pursuant to subdivision (e) will be required to submit reports for monthly ambient air monitoring results for lead and wind data measured at each sampling location on a monthly basis. Beginning no later than 90 days after receiving Executive Officer approval of a Lead Ambient Air Monitoring and Sampling Plan, reports must be submitted by the 15th of each month for the preceding month, and must include the results of individual 24-hour samples and 30-day averages for each day within the reporting period.

Any exceedance of the ambient air quality concentration shall be reported to the Executive Officer (1-800-CUT-SMOG) within 24 hours of receipt of completed sample analysis, followed by a written report to the Executive Officer no later than three calendar days after the notification.

Any existing ambient air monitoring network currently in use for Rule 1420 shall be used for compliance with PAR 1420 as long as all rule requirements for sampling and monitoring have been met. Monitoring may cease only when the conditions specified in (l)(2) are met.

Subdivision (f) – Lead Point Source Emission Controls

Lead point sources are defined by the proposed rule as any process, equipment, or total enclosure used at a lead processing facility whose lead emissions pass through a stack or vent designed to direct or control its release into the ambient air. All lead emissions from lead point sources are required to be vented to a lead control device. Proposed requirements for lead point source emission controls will be effective beginning May 1, 2018 in order to give facilities enough time to apply for permits and construct all necessary lead control devices.

PAR 1420 requires that lead point source emission controls meet a minimum lead reduction efficiency of 99 percent or meet an outlet mass lead emissions rate of less than 0.00030 pounds per hour. Currently, Rule 1420 has a lead reduction efficiency of 98 percent or greater. Upon review of District-approved source tests for lead point sources subject to Rule 1420.2, SCAQMD staff has determined that the more stringent 99 percent lead reduction efficiency for this source category is achievable with lead control devices that are currently available.

SCAQMD staff recognizes that some lead point sources with very low uncontrolled emissions may have difficulty demonstrating the 99 percent lead reduction efficiency requirement due to low inlet

loading. Therefore, in lieu of complying with the 99 percent lead reduction efficiency, PAR 1420 will allow the owner or operator of a lead processing facility to demonstrate an outlet mass lead emission rate of less than 0.00030 pounds per hour. This allows owners or operators to better manage source-testing costs since mass emissions will eliminate the cost associated with inlet sampling and testing.

Subdivision (g) – Total Enclosures

The owner or operator of a lead processing facility will be required to conduct operations within a total enclosure that minimizes cross draft conditions. The areas may be enclosed individually or in groups. The intent of this requirement is to provide maximum containment and minimize fugitive lead-dust emissions generated in areas where lead processing, handling or storage of lead-containing materials occur.

A total enclosure is a permanent containment structure, completely enclosed with a floor, walls, and a roof to prevent exposure to the elements, (e.g., precipitation, wind, and run-off), with limited openings to allow access and egress for people and vehicles, that is free of breaks, cracks, gaps, or deterioration that could cause or result in fugitive metal dust.

Cross-draft conditions of a total enclosure shall be minimized by closing any openings that result in a decrease in the efficiency of an emission collection system, including, but not limited to, vents, windows, passages, doorways, bay doors, and roll-ups during lead processing operations. Alternative methods to closing openings, including use of automatic roll-up doors and installation of plastic strip curtains and vestibules may be used if the owner or operator can demonstrate to the Executive Officer equivalent or more effective ways to minimize cross-draft conditions.

The completion schedule for total enclosure will depend on whether the owner or operator is processing lead in a building existing as of the date of adoption of PAR 1420 or if a new building has to be constructed. In the case of lead processing conducted in an existing building that will be modified to a total enclosure to meet the provisions of paragraph (d)(2), construction should be completed by May 3, 2018. If however, a new building has to be constructed to satisfy the requirements of paragraph (d)(2) the construction completion date is no later than 12 months after the date of adoption of PAR 1420. In addition, the owner or operator will also be required to provide the Executive Officer with a written notice that a new total enclosure will be constructed, within 60 days after the adoption of PAR 1420. Any enclosure type will also be required to be designed in a manner that does not conflict with federal OSHA or Cal-OSHA worker safety guidelines.

Until construction of total enclosures are complete housekeeping provisions of subdivision (h) cleanings by wet mop or vacuum shall be conducted after or at the end of each operating shift:

- Floors within 30 feet of a work station or work stations for processing lead
- Floors within 40 feet of any entrance or exit point for the temporary enclosure or building
- Floors of temporary enclosure or building areas where lead processing operations are conducted

PAR 1420 will require at least monthly inspection of any total enclosure and require the owner or operator to stop lead processing activities that are conducted within a total enclosure if an inspection reveals any breaks, cracks, gaps, or deterioration that could result in fugitive lead dust. Lead processing may not be resumed until the enclosure is repaired or if temporary measures are implemented to ensure that no fugitive lead dust results from the break, crack, gap or point of deterioration. Repairs are required to be completed within 72 hours of discovery and in the event that an extension is required, the Executive Officer may grant one provided the request is submitted before the 72-hour time limit has expired.

Subdivision (h) – Housekeeping Requirements

The following housekeeping requirements are proposed to minimize fugitive lead-dust emissions. All requirements will be effective within 30 days of rule adoption with the exception of the requirement to conduct annual rooftop cleanings of structures and the prohibition for dry sweeping and use of compressed air to clean. The prohibition for dry sweeping and use of compressed air to clean will be effective upon adoption of PAR 1420. Only facilities that process greater than 10 tons of lead per year of lead are required to conduct rooftop cleanings, which should be completed at least once annually and scheduled during the months of July through September.

- Cleaning by wet wash, wet mop or using a vacuum in a manner that does not generate fugitive lead-dust of the areas listed below are required at the specified frequencies, unless located within a total enclosure vented to a lead emission control device. Days on which there is measurable precipitation in the specified areas occurring within the timeframe of a required cleaning, may be counted as a cleaning activity.
  - Weekly cleanings by wet wash, vacuum, wet-mop, or stabilization with a non-chemical dust suppressant of all areas where lead-containing wastes generated from housekeeping activities are stored, disposed of, recovered or recycled, and surfaces that accumulate lead-containing dust subject to foot or vehicular traffic; and
- Quarterly cleaning of collection vents, ducting, and openings for lead emission control devices to prevent dust building up and clogging
- Removal of weather caps on any stack that is a lead emissions source
- Storage of all materials capable of generating any amount of fugitive lead-dust in sealed, leak-proof containers, or stabilize such materials with a non-chemical dust suppressant approved in writing by the Executive Officer, unless located within a total enclosure. Examples of materials include slag, spent filters used in lead control devices, and lead-containing waste generated from housekeeping requirements.
- Transport all materials capable of generating any amount of fugitive lead-dust emissions within closed conveyor systems or in sealed, leak-proof containers, or stabilize such materials using a non-chemical dust suppressants approved in writing by the Executive Officer, unless conducted within a total enclosure. .
- Cleaning of paved areas where construction or maintenance occurs no later than one hour after completion unless located within a total enclosure vented to a lead emission control device
- Except when inside a total enclosure, all lead-containing trash and debris shall be placed in covered containers that remain covered at all times except when trash or debris is actively transferred. Trash and debris containers shall be free of liquid or dust leaks.

- Post signs at all entrances and truck loading and unloading areas indicating a facility speed limit of 5 miles per hour or less on any roadway located within 75 feet of the perimeter of a total enclosure.
- For any of the housekeeping requirements listed above, an alternative housekeeping measure can be used if the owner or operator demonstrates and receives written Executive Officer approval that the alternative (housekeeping) measure meets the same objective and effectiveness of the housekeeping requirement that it is replacing.
- Quarterly cleaning of vents and openings associated with the inlet of lead emission control devices

Subdivision (i) – Ambient Monitoring and Sampling Requirements

Facilities notified by the Executive Officer that they are required to conduct ambient air monitoring shall submit a Lead Ambient Air Monitoring and Sampling Plan for review and approval by the Executive Officer. Information required in the plan includes:

- Source test results of all lead point sources;
- Map of facility identifying the location of all lead emission sources, air pollution control devices, stacks, enclosures, openings of enclosures, storage of lead-containing materials, roadways where vehicles carrying lead-containing materials travel within the facility, vehicle egress and ingress locations, the property line of the facility, the fence line of the facility if it differs from the property line of the facility, and any areas within the property line of the facility that are publicly accessible; and
- Number and locations for sampling sites that meet the requirements of paragraph (e)(2).

PAR 1420 facilities subject to Lead Ambient Air Monitoring and Sampling requirements will be required to collect and analyze ambient air lead samples to determine compliance with the ambient air quality lead concentration limits of the rule. This subdivision provides the requirements for submittal of an ambient air monitoring and sampling plan, the number of monitors, placement of monitors, and installation of monitors.

No later than 90 days after approval of a Lead Ambient Air Monitoring and Sampling Plan, facilities will be required to install monitors and conduct ambient air lead monitoring and sampling. Samples must be collected from a minimum of two sites with locations of the sampling sites based on maximum expected ground level lead concentrations, at or beyond the property line, as determined by Executive Officer-approved air dispersion modeling calculations and emission estimates from all lead point sources and fugitive lead-dust sources, and other factors including, but not limited to, population exposure and seasonal meteorology.

The Executive Officer may require a facility to relocate existing monitors or install additional monitors to those required as specified above in order to measure ambient air lead concentrations at locations that may contribute to the exceedance of an ambient air lead concentration limit specified in subdivision (d). The basis for relocating existing monitors or requiring installation of additional monitors shall be based on information showing:

- A new or existing lead source that was not previously identified or fully disclosed;
- An increase in lead emissions from an existing source where existing monitors are not capturing the potential ambient air lead concentration; or

- Inability of the existing monitors to capture the maximum expected ground level lead concentrations.

A facility that is required to conduct ambient air monitoring will be required to collecting a valid 24-hour, midnight-to-midnight sample at all sites based on a sampling frequency of 1 in 6 days. PAR 1420 requires that 24-hour lead samples be collected and requires that samples be collected midnight-to-midnight at all sites, however an alternative 24 hour sampling schedule may be allowed based on approval of the Executive Officer. Approval of an alternative schedule shall be granted if it is demonstrated to the Executive Officer that the alternative schedule is adequate to routinely collect valid 24-hour samples, as defined in the rule, and is conducted using the sampling methods referenced in paragraph (e)(6). Facilities will also be required to continuously monitor wind speed and direction as described in the approved plan for the ambient air quality monitoring system at all times to supplement data analysis of the samples collected. Approval shall be based on guidelines for wind and speed direction monitoring as provided in the "*SCAQMD Rule 403 Implementation Handbook – Chapter 6: On-Site Wind Monitoring Equipment*," or other relevant EPA reference documents such as the "*Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV, Meteorological Measurements*."

Only personnel approved by the Executive Officer, or facility personnel trained and certified to conduct ambient air monitoring demonstrated through successful completion of a course offered or approved by the Executive Officer will be allowed to conduct ambient air quality monitoring. Monitoring and sampling equipment shall be operated and maintained in accordance with U.S. EPA-referenced methods.

Facilities required to conduct ambient monitoring pursuant to subdivision (e) will be required to submit reports for monthly ambient air monitoring results for lead and wind data measured at each sampling location on a monthly basis. Beginning no later than 90 days after receiving Executive Officer approval of a Lead Ambient Air Monitoring and Sampling Plan, reports must be submitted by the 15th of each month for the preceding month, and must include the results of individual 24-hour samples and 30-day averages for each day within the reporting period.

Any exceedance of the ambient air quality concentration shall be reported to the Executive Officer (1-800-CUT-SMOG) within 24 hours of receipt of completed sample analysis, followed by a written report to the Executive Officer no later than three calendar days after the notification.

Any existing ambient air monitoring network currently in use for Rule 1420 shall be used for compliance with PAR 1420 as long as all rule requirements for sampling and monitoring have been met. Monitoring may cease only when the conditions specified in (l)(2) are met.

Subdivision (j) – Source Tests

Effective upon the date of adoption of PAR 1420, the proposed rule amendment will require an initial source test and then biennial source tests afterwards to demonstrate compliance with the facility mass lead emissions standard of 0.0003 pound per hour specified in subdivision (f). This lead mass emission limit is consistent with limits in Rule 1420.2. If a biennial source test to demonstrate compliance with the lead point source standard results in a 99 percent or greater reduction of lead emissions and stack outlet mass lead emissions of less than 0.00015 pounds per

hour, then the next test for the lead point source control device shall be performed no later than 48 months after the date of the most recent test.

Initial source tests for new and modified lead control devices with an initial start-up date on or after the adoption date of the proposed amended rule will be required within 60 days of initial start-up. Existing lead control devices in operation before the adoption date of the rule will require a source test no later than February 3, 2018. An existing source test, for existing lead control devices, conducted on or after January 1, 2014 may be used as the initial source test, provided the test:

- Is the most recent conducted since January 1, 2014;
- Demonstrated compliance with the control requirements of subdivision (f);
- Is representative of a method used to test emissions from control devices currently in use; and
- Was conducted using applicable and approved test methods specified in paragraph (j) (6) through ((j)(8).

Source tests shall be conducted while the equipment is operating at a minimum of 80 percent of the equipment's permitted capacity and lists the following applicable test methods for testing for inorganic lead from stationary sources:

- SCAQMD Method 12.1;
- ARB Methods 12; and
- EPA Method 12.

Use of an alternative or equivalent test method will be allowed as long as it is approved in writing by the Executive Officer, in addition to the California Air Resources Board, or the U.S. EPA, as applicable. Facilities will be required to submit a pre-test protocol to the Executive Officer at least 60 calendar days prior to conducting the source test. The pre-test protocol shall contain target lead mass emission standards, planned sampling parameters and information regarding equipment, logistics, personnel and other resources necessary that facilitate an efficient test. The owner or operator is also required to provide written notification to the Executive Officer one week prior to conducting source tests required by paragraphs (j)(1) and (j)(2).

Subdivision (k) – Air Pollution Control Device Monitoring

Proposed Amended Rule 1420 includes parametric monitoring to ensure proper operation of the pollution control device. Operational parameters are generally expressed as range parametric measurements within which the air pollution control device functions best and realizes optimum efficiency. Parametric monitoring is conducted separate from source testing and provides a good indicator when there is an issue with the pollution control device in between source testing.

Bag Leak Detection System

The owner or operator of a lead processing facility shall apply for a permit to install, operate, calibrate and maintain a Bag Leak detection System (BLDS) pursuant to SCAQMD Rule 1155.

Pressure Across a Filter

The pressure across the filter of an emission control device shall be continuously measured with a mechanical gauge that is visible and in clear line of sight of the operator or maintenance personnel.

The reading from the gauge provides an indication of whether the filters are operating within the proper range of pressure differential or the filters may be clogged or have leaks, thereby compromising their effectiveness. The monitoring device shall be required to:

- Be equipped with ports that allow for periodic calibration in accordance with manufacturer's specifications;
- Be maintained in accordance with manufacturer's specifications;
- Be calibrated according to manufacturer's specifications at least once every calendar year;
- Be equipped with a continuous data acquisition system (DAS). The DAS shall record the data output from the monitoring device at a frequency of not less than once every sixty (60) minutes; and
- Generate a data file from the computer system interfaced with each DAS each calendar day. The data file shall be saved in electronic Microsoft Excel (xls or xlsx) format as approved by the Executive Officer. The file shall contain a table of chronological dates and time and the corresponding data output value from the monitoring device in inches of water column. The operator shall prepare a separate data file each day showing the 4-hour rolling average pressure readings recorded by this device each calendar day.

If the pressure across the filter (associated with the emission control device) is not maintained within the range specified in the Permit to Operate or the range specified by the manufacturer or the Executive Officer, based on hourly or more frequent recordings by the DAS for the averaging periods specified below, the owner or operator shall require additional source testing as discussed in source testing section of this chapter.

- A 4-hour time period on 3 or more separate days over 60 continuous days; or
- Any consecutive 24-hour period.

The acceptable range of pressure across the filter may be specified in the Permit to Operate or shall be determined by the Executive Officer based on supporting documentation such as manufacturer specifications and source test results.

Verification of Air Flow to the Air Pollution Collection System

The corresponding duct static pressure for the minimum hood induced capture velocity for emission control devices shall be accurately measured once per operating day using the measurement procedures specified in the most current edition of the *Industrial Ventilation, A Manual of Recommended Practice for Operation and Maintenance,* published by the American Conference of Governmental Industrial Hygienists, at the time a permit application is deemed complete with the SCAQMD, or any more stringent methods required by OSHA or CAL-OSHA.

In addition, for each emission collection system required to be monitored under PAR 1420, confirmation of the capture velocity referenced in paragraph (k)(3) and a periodic smoke test shall be conducted at least once every 3 months. The periodic smoke test provides a qualitative test for owners and operators to help determine whether cross draft conditions or other activities conducted at the facility are affecting the ability of the emission collection system or hood to effectively capture emissions. It also serves to verify that the airflow is moving towards the air pollution collection system, which in turn improves the effectiveness of the air pollution control device. Smoke test procedures are outlined in Appendix 1 of the proposed rule.

Hot Wire Anemometer

The capture velocity of each emission collection system shall be measured at least monthly using a calibrated hot wire anemometer. The emission collection system designed with a hood or enclosure shall maintain a capture velocity of at least 200 feet per minute as measured at the face of the enclosure. An emission collection system with slots, but without an enclosure or hood shall maintain a capture velocity of at least 2,000 feet per minute or the minimum slot velocity measured in the most recent source test that verified complete collection efficiency, whichever is greater.

Subdivision (l) – Recordkeeping

PAR 1420 will require records be kept to indicate that facilities comply with the recordkeeping requirements. Owner and operators will be required to maintain records for the following:

- Monthly amounts of lead-containing raw materials processed at a facility, including but not limited to purchase records;
- Results of lead content analyses, baghouse catch analyses, or other SCAQMD-approved verification to determine processing amounts and lead content;
- Ambient air lead monitoring and wind monitoring;
- Housekeeping pursuant to subdivision (i);
- Total enclosure inspection and maintenance, including information related to repair activities;
- Lead control device inspection and maintenance;
- Bag Leak Detection Systems;
- Source test data
- Air pollution control device monitoring and inspections
- Hot wire anemometer data collected including capture velocities, dates of measurement, and calibration documentation

Facilities may determine the amount the lead content of material processed by analyzing the feedstock, including ingots and scrap, of material charged. Alternatively, a facility may analyze the baghouse catch to demonstrate lead content of materials processed. All records shall be maintained for three years, with at least the two most recent years kept onsite.

Subdivision (m) – Exemptions

Paragraph (l)(1) provides an off-ramp for facilities that have been required to conduct ambient monitoring pursuant to subdivision (e). If the facility can demonstrate ambient lead concentration levels of less than or equal to 0.070 $\mu g/m^3$ averaged over 30 consecutive days for one year when measured during normal operating conditions representative of the facility then the facility shall be granted exemption upon Executive Officer approval of an air monitoring relief plan that contains all of the following:

- Air dispersion modeling analysis that demonstrates an ambient air lead concentration of $\leq$ 0.070 $\mu g/m^3$ averaged over 30 consecutive days representative of normal facility operations; and
- One (1) year of ambient air lead monitoring data without a single 30 consecutive day average exceeding an ambient air lead concentration of 0.070 $\mu g/m^3$;

- The facility's most recent source tests approved by the District demonstrate that mass lead emission rate from each lead point source control device of less than 0.00030 pound per hour; and
- The facility's most recent source tests approved by the District demonstrate that total facility mass lead emission rate from all lead point source control devices of less than 0.0030 pound per hour

Appendix 1 – Periodic Smoke Test

Appendix 1 specifies the requirements for periodic smoke tests to demonstrate capture efficiency for ventilation systems of add-on air pollution control device(s) pursuant to paragraph (j)(5). The periodic smoke test requirement of PAR 1420 will not be required if performing such test presents an unreasonable risk to safety. An example of such unreasonable risk to safety includes having to conduct a smoke test at collection sites that would be extremely dangerous, if not deadly, for somebody to work in that collection zone. Smoke test procedures are outlined in Appendix 1 of the proposed amended rule (PAR 1420).

CHAPTER 3: IMPACT ASSESSMENT

AFFECTED FACILITIES

PAR 1420 affects approximately 107 lead processing facilities. Source categories include lead smelters, foundries, smaller lead acid battery manufacturers and recyclers, lead oxide, brass, and bronze producers, and metal melting facilities.

The majority of affected facilities conduct lead soldering or tin/lead plating. Of the 107 facilities estimated to be impacted by the proposed rule, 92 are subject to the rule solely because of their lead soldering or tin/lead plating operations. Based on initial estimates these facilities are expected to process less than 2 tons of lead per year and will only be subject to the conditional ambient monitoring limits and housekeeping and recordkeeping provisions. Also, at the majority of the electronic-related businesses the temperatures to which lead is heated are not substantial enough to promote vaporization and facilities in this category that were visited were found to already exercise good housekeeping practices.

The remaining 15 facilities are expected to be required to enclose their lead processing operations, install an anemometer, and conduct biennial source testing, annual rooftop cleaning, and quarterly smoke tests. It is estimated that each shop will incur a one-time cost between $28,000 and $220,000 and reoccurring costs between $10,000 and $62,000 depending on the number of lead point sources at the facility and the level of construction necessary to enclose the buildings housing their lead processing areas.

EMISSIONS IMPACT

Implementation of PAR1420 will reduce point and fugitive emissions resulting in reduced ambient air lead concentrations. Implementation of PAR 1420 will reduce point and fugitive emissions. Quantifying the point source emission reductions is difficult as many sources do not have current source tests and quantifying emission reductions from fugitive sources is difficult. PAR 1420 will require an ambient air lead concentration of 0.150 $\mu g/m^3$ averaged over any 30 consecutive days from the date of adoption through December 31, 2020 and an ambient lead concentration of 0.100 $\mu g/m^3$ averaged over any 30 consecutive days on or after January 1, 2021.

SOCIOECONOMIC ASSESSMENT

A socioeconomic assessment for PAR 1420 will be conducted and will be available to the public at least 30 days prior to the SCAQMD Governing Board Meeting anticipated for November 3, 2017.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Pursuant to the California Environmental Quality Act (CEQA) and SCAQMD Rule 110, SCAQMD staff will evaluate the proposed project and make the appropriate CEQA determination. The public workshop meeting will also provide an opportunity to solicit public input on any potential environmental impacts from the proposed project. Comments received at the public workshop on any environmental impacts will be considered when making the CEQA determination.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings
California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the SCAQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report.

Necessity
PAR 1420 is needed to further protect public health by reducing lead emissions from lead processing facilities. For a toxic air contaminant, such as lead, for which there is no level of exposure that can yet be identified with confidence, as clearly not being associated with some risk of deleterious health effects, the intent of this proposed rule is to reduce emissions to the lowest level achievable through the most effective feasible control method. The proposed rule will reduce ambient lead emissions from point sources as well as fugitive emissions from facility operations. In addition, the proposed rule will help ensure that violations of the NAAQS do not occur.

An ambient lead concentration limit of 0.100 $\mu g/m^3$ will be more health protective for communities that live around metal melting facilities, particularly younger children. There is substantial scientific justification provided through EPA's development of the 2008 Lead NAAQS and the 2016 Final Decision to Retain the Current Lead NAAQS evidence-based framework to support the policy decision to establish an ambient limit of 0.100 $\mu g/m^3$. The above discussion provides a description of EPA's evidence-based framework to establish the 2008 Lead NAAQS of 0.15 $\mu g/m^3$ and key policy judgments made regarding the level of health protection and margin of safety for the national standard. As previously stated, there are currently no commonly accepted guidelines or criteria within the public health community that would provide a clear basis for reaching a judgment as to the appropriate degree of public health protection that should be afforded to protect against risk of neurocognitive effects in sensitive populations, such as IQ loss in children." (73 FR 67004). As a regional air agency, developing a source-specific-rule for lead processing facilities, the SCAQMD staff is recommending policy decisions that are more health protective for communities, particularly young children, that are affected by lead emissions from lead processing facilities regulated under Proposed Amended Rule 1420. The above discussion substantiates the policy decision to establish an ambient lead concentration limit of 0.100 $\mu g/m^3$, with some key points of the above discussion highlighted below:

- No safe blood level of lead in children has been identified (CDC, 2012a)
- The developing nervous system in children is among the sensitive-- if not the most sensitive-endpoints. (73 FR 66976)
- Lead affects children's IQs at exposure levels appreciably lower than recognized. (CHPAC, 2105)
- Pre-school children or children under five years old are the most vulnerable to exposure and adverse health effects, and thereby represent the greatest at-risk population. (EPA, 2013)
- Younger children absorb substantially more lead than adults, especially children below 2 years of age. (OEHHA, 2009)

- No study has determined a level of lead in blood that does not impair child cognition. Further, the effects are long-lasting. Damage to a child's developing brain from lead is not reversible. (AAP, 2008)
- CASAC commented that ''a population loss of 1–2 IQ points is highly significant from a public health perspective.'' (EPA, 2008)
- Air-to-blood ratio of 1:10 is also supported by EPA's evidence based air-related IQ loss data and is even more health protective (CHPAC, 2008b)

Based on all the foregoing, the evidence supports the District's policy decision to establish a final lead limit in ambient air at 0.100 $\mu g/m^3$.

Authority
The SCAQMD Governing Board has authority to adopt PAR 1420 pursuant to the California Health and Safety Code Sections 39002, 39650 et. seq., 40000, 40001, 40440, 40441, 40702, 40725 through 40728, 41508, 41700 and 41706.

Clarity
PAR 1420 is written or displayed so that its meaning can be easily understood by the persons directly affected by it.

Consistency
PAR 1420 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

Non-Duplication
PAR 1420 will not impose the same requirements as any existing state or federal regulations. The proposed amended rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the SCAQMD.

Reference
By adopting PAR 1420 the SCAQMD Governing Board will be implementing, interpreting or making specific the provisions of the California Health and Safety Code Sections 40001 (rules to achieve and maintain ambient air quality standards), 41700 (nuisance), 41706(b) (emission standards for lead compounds from non-vehicular sources), Federal Clean Air Act (CAA) Section 112 (Hazardous Air Pollutants), and CAA Section 116 (more stringent state standards).

COMPARATIVE ANALYSIS

Health and Safety Code section 40727.2 requires a comparative analysis of the proposed rule with any Federal or District rules and regulations applicable to the same source. See Table 3-1 below.

Table 3-1: Comparison of PAR 1420 with SCAQMD Rule 1420, SCAQMD Rule 1420.2, the CARB 1998-12-30 Non-Ferrous Metal Melting ATCM, the 2008 Lead NAAQS, and the NESHAP for Secondary Lead Smelters

Rule Element	PAR 1420	SCAQMD Rule 1420	SCAQMD Rule 1420.2	CARB 1998-12-30 Non Ferrous Metal Melting ATCM	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
Applicability	Facilities that process materials lead content greater than 0.05 percent by weight	Facilities that use or process lead-containing materials	Facilities that melt 100 tons or more of lead in any calendar year	Facilities that melt non-ferrous metals including lead	All States	Secondary lead smelters
Ambient Air Quality Standard	11/3/17 - 12/31/20: 0.15 µg/m^3 averaged over 30 consecutive days; On or after 1/1/2021: 0.10 µg/m^3 averaged over 30 consecutive days;	1.5 µg/m^3 averaged over 30 days	10/2/15 to 3/31/18: 0.150 µg/m^3 averaged over 30 consecutive days. facilities must meet the initial limit no later than 90 days after approval of ambient air monitoring and sampling sites by the Executive Officer. On and after January 1, 2018, all facilities must meet 0.100 µg/m^3 averaged over 30 consecutive days.	None	0.15 µg/m^3: 3-month rolling average Demonstrated over a 3-year period.	None
Total Enclosures	Total enclosure required for lead processing areas	None	Total enclosure for furnace, refining, casting, lead oxide production and pasting areas	Enclosed storage area for dust-forming material including, but not limited to, dross, ash, or feed material	None	Total or partial enclosures for: - Smelting furnace and dryer charging hoppers, chutes, and skip hoists; - Smelting furnace lead taps, and molds during tapping; - Refining kettles;

Total Enclosures continued						- Dryer transition pieces; and Agglomerating furnace product taps
Emission Standard and Requirements for Lead Control Devices	99% control efficiency for lead or meet an outlet mass lead emission rate of less than 0.00030 lbs/hr	99% control efficiency for particulate matter; or 98% control efficiency for lead	99% control efficiency for lead or meet an outlet mass lead emission rate of less than 0.00030 lbs/hr	99% control efficiency	None	Concentration of 2.0 mg/dscm
Compliance Plan	None Required	Specifies general facility information	Only required if a facility exceeds ambient lead concentration limit of 0.120 µg/m^3 from July 1, 2016 to December 31, 2017 or 0.100 µg/m^3 on or after January 1, 2018, or total facility point source emissions greater than 0.080 lb/hour after July 1, 2016. Identifies additional lead control measures beyond the rule.	None	None	None
Ambient Air Monitoring Requirements	Conditionally required if ambient air concentration exceeds 0.15 µg/m^3 as determined by SCAQMD monitor or lead point source limit exceeded two or more times over a rolling 36 month period.	Minimum of two monitors at facility locations approved by the Executive Officer Samples collected every six days Results reported quarterly	- Minimum of three monitors at facility locations approved by the Executive Officer - Provisions included for monitor failure - One year sample retention - Samples collected once every three days or daily depending on the exceedance of ambient air concentration limits, and	None	For states, a minimum of: - One source-oriented monitor at all facilities emitting 1.0 tons of lead/year; and - One non-source-oriented monitor in urban areas with a population	None

			the severity. Provisions included to cease monitoring if lead concentration is below 0.070 µg/m^3 average over 30 consecutive days, no single day exceeding 0.070 for one full, and total facility mass lead emissions are less than 0.040 lb/hour. - Results reported monthly		of at least 500,000 people - Samples collected every six days	
Housekeeping and Maintenance Requirements	- Requirements for storage of dust-forming material - Daily cleaning of surfaces subject to vehicular traffic - Storage and disposal of lead or lead-containing wastes in closed containers - Posted facility vehicle speed limit of 5 miles per hour on any roadway located within 75 feet of total enclosure	- Requirements for storage of dust-forming material; weekly cleaning of surfaces subject to vehicular or foot traffic; and storage, disposal, recovery, and recycling of lead or lead-containing wastes generated from housekeeping activities	- Requirements for storage of dust-forming material - Daily cleaning of surfaces subject to vehicular traffic - Storage and disposal, lead or lead-containing wastes in closed containers - Posted facility vehicle speed limit of 5 miles per hour on any roadway located within 75 feet of total enclosure; 15 miles per hour speed limit for roadways located more than 75 feet from total enclosure - All outside concrete or asphalt cutting performed under 100% wet conditions - Grading of soil only on soils sufficiently wet to prevent fugitive emissions	Surfaces subject to vehicular or foot traffic shall be vacuumed, wet mopped or otherwise maintained	None	Periodic wash down of plant roadways (lower frequency than Rule 1420.1); wet suppression of battery breaking area storage piles; vehicle wet washing of vehicles exiting the materials handling and storage areas
Reporting Requirements	- Monthly ambient air monitoring reports	Ambient air lead and wind monitoring for any lead-processing facility that is	- Monthly ambient air monitoring reports	- Source test results Amount of metal processed if	For states:	- Lead control alarm/failure reports including

	- Exceedances of ambient air concentration to be reported within 24 hours - Failure to collect 24 hour sample to be reported within 2 hours of knowing the sample was not collected - Source test results to be reported within 90 days	required or elects to do ambient air monitoring	- Exceedances of ambient air concentration to be reported within 24 hours - Failure to collect 24 hour sample to be reported within 2 hours of knowing the sample was not collected - Source test results to be reported within 90 days	requesting exemption	- State Implementation Plan submittal; - Periodic emissions reports from stationary source monitors; - Ambient air quality data and associated assurance data	fugitive dust control measures performed during failures
Exemptions	- Facilities that process materials with lead content less than 0.05 percent by weight - Facilities processing less than two tons per year subject only to conditional ambient monitoring, housekeeping, and recordkeeping	Facilities that process materials with lead content less than 0.5 percent by weight Facilities processing less than two tons per year subject to compliance plan, housekeeping, and recordkeeping	- Facilities that process less than 50 tons per year of lead	- Facilities that process less than 200 tons per year of lead	- None	- Facilities that emit less than 10 tons per year of lead

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