

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Revised Draft Staff Report

Proposed Amended Rule 1156 – Further Reductions of Particulate Emissions from Cement Manufacturing Facilities

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EXECUTIVE SUMMARY

Rule 1156 - Further Reductions of Particulate Emissions from Cement Manufacturing Facilities was adopted by the AQMD Governing Board in November 2005. Rule 1156 requires cement manufacturing facilities to comply with specific requirements applicable to various operations, as well as materials handling and transport at the facilities.

Elevated ambient concentrations of hexavalent chromium (hexavalent chromium) in Rubidoux were discovered through sampling efforts of the Multiple Air Toxics Emissions Study (MATES III). Extensive additional sampling and modeling traced these emissions to loading, unloading, and transferring of clinker material stored in the open at TXI Riverside Cement (TXI) located in Riverside. TXI is one of the two facilities in the AQMD's jurisdiction subject to Rule 1156; the other being California Portland Cement Company (CPCC) located in Colton.

Currently, TXI no longer stores and handles clinker materials in the open. As a result of the settlement agreement with the AQMD, TXI has removed all clinker piles from the open storage areas as of August 15, 2008, and is not allowed to have open storage and handling of clinker material in the future. Further, any clinker handling or storage will occur in an enclosed setting, controlling all emissions from clinker material processing to the extent feasible. Since implementation of the settlement agreement, the 24-hour hexavalent chromium concentrations measured in the vicinity of TXI and at the Rubidoux monitoring station as part of the AQMD's on-going air quality monitoring effort depicts an overall downward trend (Figure 1).

To further reduce particulates and to address the issue of hexavalent chromium as fine particulate matter from cement manufacturing facilities, while preserving the original intent of the previously adopted rule, AQMD staff released their initial proposed amendment to Rule 1156 and conducted a public workshop on July 2, 2008. That proposal called for total enclosure of all clinker storage and handling, regardless of size. However, during the public comment period, staff received comments citing intense financial hardship, including potential facility shut down relative to the high cost of the enclosure proposal.

With the intent to ensure reductions of particulates from cement manufacturing facilities and to limit exposure to PM10, as well as hexavalent chromium, while addressing the issue of financial hardship, AQMD staff has revised the proposal.

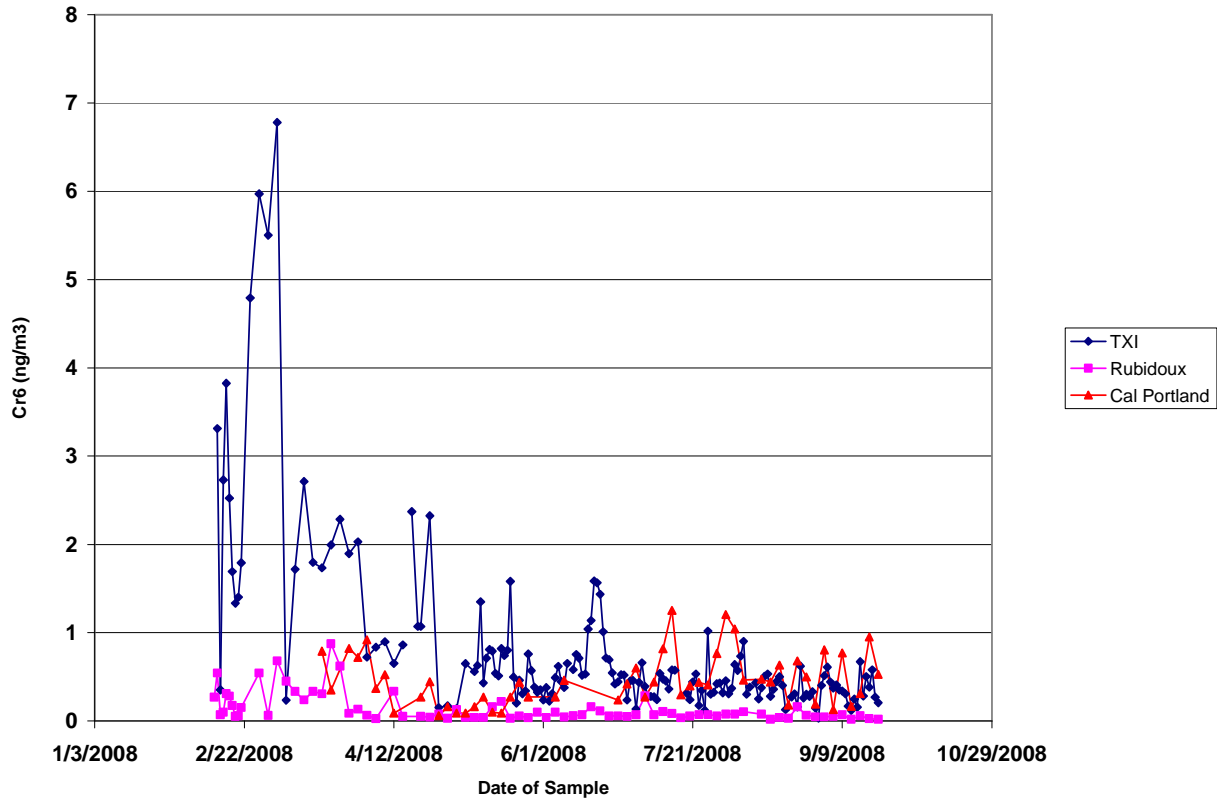


Figure 1 – Hexavalent Chromium in Western Riverside and San Bernardino Counties

The current Proposed Amended Rule (PAR) 1156 would require total enclosure of clinker storage and handling conducted within 1,000 feet from, and inside, from a facility’s property line. For clinker storage and handling activities that occur more than 1,000 feet from, and inside, from a facility’s property line, PAR 1156 would allow the use of alternatives, such as a three-sided barrier covered with a roof and wind fence for active, barn-type storage; tarp and barrier/wind fence for other active piles; and tarping for inactive piles. The proposal would also require ambient monitoring to measure PM10 and hexavalent chromium at the property fence line. Any exceedance of the PM10 level as specified in Rule 403 – Fugitive Dust, would require immediate actions to reduce clinker dust, as well as application of dust suppressant on all openly stored non-clinker material, unpaved roads, and unpaved areas within the facility. Any hexavalent chromium concentration from either a 30-day or a 90-day rolling average that is based on a once-in-three-days and once-in-six-days sampling, respectively, in exceedance of 0.7 nanograms per cubic meter (ng/m³), if valid, would trigger an incremental, total enclosure requirement for all clinker storage and handling.

The present value of control costs of PAR 1156 would be \$2.6 to \$3.2 million. The cost-effectiveness would be \$9,000 to \$11,000 per ton of PM10 reduced, unless total enclosure is required, in which case the costs would be higher.

PAR 1156 contains five main elements, as summarized below:

Material Storage

In the current adopted Rule 1156, operators of a cement manufacturing facility are required to enclose their open storage of clinker if the storage piles exceed 4 acres or 80,000 tons/month throughput. To minimize particulate emissions from storage piles that are not fully enclosed, the rule requires the use of chemical dust suppression, tarp, or barrier/wind fence.

Given the finding of AQMD's recent monitoring effort regarding hexavalent chromium and public complaints regarding fine particulates, the current proposed amendment would require total enclosure of clinker storage and handling conducted within 1,000 feet from, and inside, a facility's property line, no later than six months from date of rule adoption, and allow the use of the following in the meantime: (1) chemical dust suppressants; (2) a three-sided barrier/wind fence with or without a roof; or (3) tarp.

For the storage and handling of clinker piles located more than 1,000-feet from, and inside, a facility's property line, PAR 1156 would allow the use of: (1) a three-sided barrier covered with a roof and wind fence for active, barn-type storage; (2) tarp and barrier/wind fence for other active piles; and (3) tarp for inactive piles.

Ambient Monitoring

PAR 1156 would require the operator(s) to conduct continuous, real-time ambient air monitoring for PM10 no later than six months from date of rule adoption, using a continuous monitoring system. Any exceedance of PM10 level as specified in Rule 403 – Fugitive Dust, would require the operator(s) to immediately take steps in reducing clinker dust emissions, as well as apply dust suppressant on their openly stored non-clinker material, unpaved roads, and unpaved areas.

In addition, PAR 1156 would require the operator(s) to conduct a 24-hour ambient air monitoring for hexavalent chromium once every third day. Any 30-day rolling average hexavalent chromium concentration in exceedance of 0.7 nanograms per cubic meter (ng/m^3), if valid, would trigger an incremental, total enclosure requirement for all clinker storage and handling over a four year period.

The operator(s) would be able to conduct less frequent sampling (once every six days) if there is no hexavalent chromium exceedance during the first 24 months of monitoring. Under this schedule, any 90-day rolling average hexavalent chromium concentration in exceedance of $0.70 \text{ ng}/\text{m}^3$, if valid, would also trigger the incremental, total enclosure requirement and a reversion of the once-in-three-days sampling schedule.

In the event of a hexavalent chromium exceedance and no openly stored clinker material, the AQMD will conduct necessary studies to identify the source and the operator(s) are required to take immediate mitigation steps.

Compliance Monitoring Plan

PAR 1156 would require the operator(s) to submit a compliance monitoring plan for the monitoring and sampling analysis of PM10 and hexavalent chromium, and pay fees pursuant

to Rule 306 no later than two months from date of rule adoption. The plan will be approved or disapproved by the AQMD within 60 days from the plan submittal date. In the event issues occur which delay the plan approval, the operator(s) would be subject to an interim plan developed by the AQMD while resolving the issues.

Wind Monitoring

PAR 1156 would require the operator(s) to install equipment and conduct hourly wind monitoring according to an AQMD approved protocol no later than six months from date of rule adoption. In addition, the proposed amendment would also call for a halt of all clinker handling activities in the open for 24-hours if instantaneous wind speeds exceed 25 miles per hour (mph) in any given day. If instantaneous wind speeds exceed 25 mph in a subsequent day, a new 24-hour period shall begin.

Exemptions:

Currently, operators of a manufacturing facility can be exempt from storage piles requirement of enclosure or three-sided barrier, or from using the AQMD Rule 403 test methods for the demonstration of a pile's surface stabilization if the materials contained in 90% of the pile's volume are larger than ½ inch. Under the proposal, this would change to a mass basis and would exclude clinker material. Therefore, operators who have open piles containing only materials other than clinker would be exempt from the above mentioned requirements if the materials contained in 90% of the pile's mass are larger than ½ inch.

REGULATORY BACKGROUND

Rule 1156 - Further Reductions of Particulate Emissions from Cement Manufacturing Facilities was adopted by the AQMD's Governing Board in November 2005. The rule was designed to implement the 2003 Air Quality Management Plan (AQMP) Control Measure BCM-08 – Further Emission Reductions from Aggregate and Cement Manufacturing Operations. Rule 1156 requires cement manufacturing facilities to comply with specific requirements applicable to various operations as well as materials handling and transport at the facilities. Rule 1156 was approved by EPA into the SIP in March 2008.

As AQMD staff completed their data analysis for MATES III, they observed clear, unexpected elevated levels of hexavalent chromium at the Rubidoux monitoring station in Western Riverside County, over two miles to the southwest of TXI. The AQMD's rigorous regulatory and enforcement program should have resulted in a decrease of ambient hexavalent chromium concentration.

AQMD staff has been thoroughly investigating the potential sources of the elevated hexavalent chromium level. Staff has conducted air as well as material and soil sampling, permit reviews, area-wide surveys and surveillance, and air quality modeling. After five months of rigorous search, results indicated that TXI was the source of the elevated hexavalent chromium concentrations in the area. Specifically, the handling and transport of grey clinker material has been determined to be the primary source of hexavalent chromium emissions. Clinker is a product from the kiln which is used as a feedstock to make cement. AQMD's ambient air monitoring efforts in the vicinity of TXI and at the Rubidoux monitoring station continue.

As a result of the settlement with the AQMD, TXI has removed all clinker piles from the open storage areas as of August 15, 2008, and is not allowed to have open storage and handling of clinker materials in the future. Further, any clinker handling or storage will occur in an enclosed setting, controlling all emissions from clinker material processing to the extent feasible. Since implementation of the settlement agreements, the 24-hour hexavalent chromium concentrations measured in the vicinity of TXI and at the Rubidoux monitoring station depicts an overall downward trend.

To address the issues of hexavalent chromium as a fine particulate and to reduce health risks to the surrounding community while preserving the original intent of previously adopted Rule 1156, staff released their initial proposed amendment to Rule 1156 and conducted a public workshop on July 2, 2008. That proposal called for total enclosure of all clinker storage and handling, regardless of size. However, during the public comment period, staff received comments citing intense financial hardship, including potential facility shut down relative to the enclosure proposal.

With the intent to ensure reductions of particulates from cement manufacturing facilities and to limit exposure to PM10, as well as hexavalent chromium, while addressing the issue of financial hardship, AQMD staff has revised their initial proposals.

PUBLIC PROCESS

The initial proposed amendment to Rule 1156 was released and a Public Workshop was held on July 2, 2008. Approximately 1,000 notices were mailed. Comments received reflecting public support and concerns from industry relative to the total enclosure requirement were considered by staff. Staff has been working closely with the cement manufacturing industry on various aspects, such as emissions inventory, as well as technical and financial constraints. Staff also contacted representatives from various dome manufacturing companies, as well as tarp and wind fence manufacturers/distributors, to gather information regarding cost and feasibility.

This revised amended proposal is released relative to a public consultation meeting scheduled for November 12, 2008. A Town Hall meeting to provide the community surrounding TXI and CPCC with an update regarding cement plant issues including ambient monitoring, and to introduce a summary of the revised proposed amendments to Rule 1156, is scheduled for December 3, 2008.

All public comments received during the rule amendment process will be addressed in the final staff report.

AIR QUALITY STANDARDS

The District monitors ambient air quality for criteria pollutants (ozone, carbon monoxide, particulate matter, NO₂, lead, SO₂ and sulfate) at 32 locations within the District. The following table presents a summary of the federal National Ambient Air Quality Standards (NAAQS) and State of California air quality standards for particulate matter. These air

quality standards are set to protect public health. The Basin is not in attainment with the 24-hour or annual average NAAQS for PM2.5. The Basin is also not in attainment with State annual average air quality standards for PM2.5.

**Table 1
Particulate Matter Concentrations ($\mu\text{g}/\text{m}^3$)**

Jurisdiction	PM10		PM2.5	
	Annual	24-Hour	Annual	24-Hour
Annual Average Ambient Concentrations at Rubidoux (Riverside County)*	54.7	--	19.1	--
Federal Standards	--	150	15	35
California Standards	20	50	12	--

* Preliminary figures only

HEALTH EFFECTS FROM FINE PARTICULATE MATTER

The following is an excerpt from Chapter 2, Air Quality and Health Effects, from the 2007 Air Quality Management Plan:

A consistent correlation between elevated ambient fine particulate matter (PM10 and PM2.5) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, studies have reported an association between long-term exposure to air pollution dominated by fine particles (PM2.5) and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in fine particulate matter concentration levels have also been related to hospital admissions for acute respiratory conditions, to school and kindergarten absences, to a decrease in respiratory function in normal children and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long-term exposure to particulate matter. The elderly, people with pre-existing respiratory and/or cardiovascular disease, and children appear to be more susceptible to the effects of PM10 and PM2.5.

HEALTH EFFECTS FROM HEXAVALENT CHROMIUM

Hexavalent chromium compounds are used in many industries, mainly in chrome plating, and chromate and chromate pigment productions. Studies indicate that exposure to these man-made compounds in the workplace could result in the following:

- Lung cancer;

- Irritation and damage to the skin, eyes, nose, throat, and lung, if exposed to high concentrations;
- Asthma symptoms; or
- Allergic skin reaction such as a red, itchy rash.

Hexavalent chromium compounds are classified as Toxic Air Contaminants by the CARB. The California EPA's (CalEPA) Office of Environment Health Hazard Assessment has established a cancer risk potency factor from breathing in hexavalent chromium at various ambient concentrations. This potency factor can be used to assess cancer risk over a lifetime exposure.

The cancer risk associated with hexavalent chromium from TXI is estimated at 300 to 500 in a million, which is similar to the risk found next to a busy freeway, a rail yard, or a large chrome plating facility. In addition to the requirements in the settlement agreement, TXI is being required to conduct a facility-wide health risk assessment under the Air Toxics Hotspot Information and Assessment Act, AB 2588.

PURPOSE AND APPLICABILITY

The proposed amendments are designed to ensure further reductions of particulate matter emissions from cement manufacturing facilities, in order to aid in progress towards attainment of the federal and state standards, and health protection from the emissions of fine particulates (including hexavalent chromium).

PAR 1156 would strengthen the requirements for clinker storage and handling at cement manufacturing facilities, and would require ambient monitoring for PM10 and hexavalent chromium in addition to wind monitoring.

LEGAL AUTHORITY

The AQMD obtains authority to adopt, amend, or repeal rules and regulations which control air pollution from Health and Safety Code Sections 39002, 40000, 40001, and 40440.

AFFECTED INDUSTRY

There are two facilities subject to PAR 1156: CPCC located in Colton (south-western San Bernardino County), and TXI located in Riverside (north-western Riverside County). Rule amendments would make existing requirements more stringent and add ambient and wind monitoring requirements. Since TXI no longer stores and handles clinker material in the open, it would only be subject to the compliance monitoring requirements. CPCC currently does not store and handle clinker material within 1,000 ft inside from, and inside, its property line, hence CPCC would likely elect to comply with the requirements in subparagraph (d)(5)(C) in addition to the compliance monitoring provisions.

SUMMARY OF PROPOSED RULE

PAR 1156 is summarized below.

Subdivision (d) – Requirements

Material Storage:

Current proposed amendments to Rule 1156 would require total enclosure of clinker storage and handling conducted within 1,000 feet from, and inside, a facility's property line, no later than six months from date of rule adoption. Prior to the completion and operation of the enclosure, PAR 1156 would allow use of the following: (1) chemical dust suppressants; (2) a three-sided barrier/wind fence with or without a roof in addition to maintain pile's surface stabilization; or (3) tarp.

For the storage and handling of clinker piles located more than 1,000-feet from, and inside, a facility's property line, PAR 1156 would allow use of: (1) a three-sided barrier covered with a roof and wind fence of a maximum 20% porosity for active, barn-type storage; (2) tarp and extended wind fence with at least 5-foot freeboard for active piles that are immediately adjacent to the above mentioned covered barrier; and (3) tarp and barrier/wind fence with at least a 5-foot freeboard and extended at least 20 feet beyond the active portion of a pile for other active piles. The 1,000 feet threshold is selected because most fugitive dust emissions deposit within 1,000 feet from the source.

For inactive clinker storage, PAR 1156 would alternatively allow tarping only, provided that records of inactive status are maintained. Inactive clinker piles are piles of clinker materials that have not been disturbed, removed, and/or added as a result of loading, unloading, and/or transferring activities for a minimum of 30 consecutive days.

Language in subparagraph (d)(2)(B) has been revised to clarify that during all conveying activities, the enclosed transfer points and enclosed conveying systems must be vented to a permitted and operated control equipment that meet the required standards.

Ambient Monitoring

PAR 1156 would require the operator(s) to conduct continuous, real-time ambient air monitoring for PM10 no later than six months from date of rule adoption, using a continuous monitoring system. The differences of PM10 concentrations from any two monitoring sites which represent upwind and downwind concentrations shall not exceed the level specified in Rule 403. Currently, this level is 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) as measured by specified sampling requirements. This level and method of measurement for fugitive dust, however, may be revised based upon the results of an on-going AQMD study. In the event such a level is exceeded, the operator(s) must immediately take steps in reducing clinker dust emissions, as well as apply dust suppressant, as appropriate, on their openly stored non-clinker material, unpaved roads, and unpaved areas.

In addition, PAR 1156 would require the operator(s) to conduct 24-hour ambient air monitoring for hexavalent chromium once every third day. The 30-day rolling average hexavalent chromium concentration at each monitoring station shall not exceed $0.70 \text{ ng}/\text{m}^3$ (based on AQMD's modeling effort). The $0.70 \text{ ng}/\text{m}^3$ represents a 99% statistical confidence

level ensuring that no more than 100-in-one-million cancer risk would be detected at the nearest receptor from a cement manufacturing facility.

Any 30-day rolling average hexavalent chromium concentration in exceedance of 0.70 ng/m^3 , if deemed valid by wind monitoring data, would trigger an incremental, total enclosure requirement for all clinker storage and handling over a four year period. No later than 12 months from the date of the exceedance, 25% of the facility's annual average clinker material stored, by weight, must be enclosed, and an incremental 25% per subsequent year until all material is enclosed. It is important to note that hexavalent chromium monitoring according to this schedule shall be maintained, and that control measures such as chemical dust suppressants, wind fences/barriers, or tarps shall be used until the completion and operation of the enclosure.

The operator(s) would be able to conduct 24-hour hexavalent chromium sampling once every six days if there is no exceedance of the 0.70 ng/m^3 during the first 24 months of monitoring. While on the less frequent compliance schedule, the 90-day rolling average hexavalent chromium concentration at each monitoring station shall not exceed 0.70 ng/m^3 . The operator(s) may continue this less frequent monitoring schedule if no exceedances occur. Otherwise, the operator(s) shall incrementally enclose their clinker storage and handling at 25% per year until completion pursuant to the schedule explained earlier, and immediately revert back to the previous once-in-three-days monitoring schedule while maintaining control measures until completion and operation of the enclosure.

In the event of hexavalent chromium exceedance and no openly stored clinker material, the AQMD will conduct necessary studies to identify the source and the operator(s) are required to take immediate mitigation steps.

Compliance Monitoring Plan

PAR 1156 would require the operator(s) to submit a compliance monitoring plan for the monitoring and sampling analysis of PM10 and hexavalent chromium, and pay fees pursuant to Rule 306 no later than two months from date of rule adoption. The plan will be approved or disapproved by the AQMD within 60 days from the plan submittal date. In the event issues occur which delay the plan approval, the operator(s) would be subject to an interim plan developed by the AQMD while resolving the issues.

In addition to any relevant data and information required by the AQMD, at a minimum, the plan shall contain the following:

- Siting and monitoring protocols that comply with EPA's and CARB's guidance and/or protocols for PM10, hexavalent chromium, wind direction, and wind speed. PAR 1156 would require a minimum of three fence-line monitoring stations for both PM10 and hexavalent chromium: one upwind and one downwind of the prevailing wind direction, and one between the nearest receptor and the clinker storage pile(s), or between the nearest receptor and the highest projected hexavalent chromium emitting source in the absence of no clinker pile(s).

- Breakdown provisions which include: (1) a policy for breakdown notification for monitors to the AQMD within 24 hours of its occurrence; (2) a repair schedule; and (3)

an action plan with detailed measures to be taken by the operator(s) to ensure no more than 25% data loss from the monitoring system.

- Operator's consent allowing the AQMD to conduct any co-located sampling at any time.
- Sampling analysis protocols that comply with EPA and/or CARB's appropriate guidance and/or protocols for PM10 and hexavalent chromium. PAR 1156 would require that all samples are analyzed at an AQMD-approved laboratory, which can be audited any time, and that all data are made available on-line to the public on the AQMD web-site.

Wind Monitoring

PAR 1156 would require the operator(s) to install equipment and conduct hourly wind monitoring according to an AQMD approved protocol no later than six months from date of rule adoption. In addition, the proposed amendment would also call a 24-hr halt to all clinker handling activities in the open if instantaneous wind speeds exceed 25 miles per hour (mph) in any given day. If instantaneous wind speeds exceed 25 mph in a subsequent day, a new 24-hour period shall begin.

Subdivision (h) - Exemptions

Operators who have open piles containing materials other than clinker would be exempt from the requirement of enclosure or three-sided barrier, or from using the AQMD Rule 403 test methods for the demonstration of pile's surface stabilization, if the materials contained in 90% of the piles' mass (instead of volume) are larger than ½ inch (paragraph (h)(1)). Applicability of this exemption must be determined through the measurement of any composite sample of at least 10 pounds taken at a minimum depth of 12 inches below the pile surface, from various locations on the pile, but not from within 12 inches from the base of the pile, to ensure adequate sampling. This change is being proposed to better provide guidance on sampling and to improve the effectiveness of the exemption.

Other

The proposed amended rule also contains other minor amendments and clarifications to better demonstrate the rule's intent.

EMISSIONS AND EMISSION REDUCTIONS

Since TXI no longer stores and handles clinker material in the open, the emissions inventory and reduction estimated herein are only for CPCC.

According to staff estimates, daily emissions from clinker storage and handling activities are 0.08 tpd for PM10 and 0.16 tpd for PM. This emissions inventory is consistent with CPCC's estimates. The majority of existing emissions are from the storage and handling of clinker material. The current control for these activities is a 3-way barrier with a roof at 75% control efficiency (CE). Minimal emissions come from wind erosion and traffic around the piles

because most of these emissions are controlled with chemical dust suppressants (at 80% CE) and tarping (at 60% CE).

Based on the current proposed amendment for clinker material storage and handling, and the assumptions that the existing barn enclosed with wind fence would achieve an 85% CE and that wind fencing in addition to tarping would result in an 80% CE, staff has estimated reductions of 0.04 tpd for PM10 and 0.09 tpd for PM. If total enclosure is required due to monitoring violations, the reductions would be 0.07 tpd for PM10 and 0.16 tpd for PM.

COSTS AND COST-EFFECTIVENESS

The present value of control cost for total enclosure of all clinker storage and handling as originally proposed in July 2008 was estimated to be \$9.5 to \$12 million. This cost includes the cost of domes at \$38/ft² to \$46/ft², the annual operating cost, and the savings from not applying chemical dust suppressant and tarp required by current Rule 1156. The estimated cost-effectiveness based on Discounted Cash Flow method for the total enclosure would be \$8,000 to \$10,000 per ton of PM reduced and \$18,000 to \$22,000 per ton of PM10 reduced, assuming a 20-year equipment life. CPCC estimated that it would cost them approximately \$21 to \$24 million to comply with the proposed amendments introduced in July 2008.

Based on the current proposal, staff has estimated the present value of control cost to be \$2.6 million. This value accounts for the discounted present value capital costs assuming a 20-year life equipment, the O/M cost, and the savings from not using dust suppressants to reduce traffic emissions around the clinker piles. The capital cost includes: (1) wind fence at \$15/ft²; (2) tarp at \$0.12/ft²; (3) continuous monitoring system for PM10 at \$23,000 each; (4) hexavalent chromium monitoring at \$21,000 each; (5) hexavalent chromium analysis at \$50 per sample; and (6) wind monitoring at \$10,000 each. In addition to the aforementioned costs, monitoring plan submittal and review costs pursuant to Rule 306 - Plan Fees - includes a minimum of approximately \$500 plus additional cost for staff time, if needed to evaluate the plan. The cost-effectiveness for the staff proposal is estimated to be approximately \$4,000 per ton of PM reduced and \$9,000 per ton of PM10 reduced.

Based on CPCC data, the overall cost would be higher, at approximately \$3.2 million. The cost-effectiveness would be about \$4,900 per ton of PM reduced and \$11,000 per ton of PM10 reduced.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

In accordance with the California Environmental Quality Act (CEQA), the South Coast Air Quality Management District (SCAQMD) is the Lead Agency for the project identified above pursuant to its certified regulatory program (SCAQMD Rule 110). A Final Environmental Assessment (EA) (SCAQMD No. 050307JK, dated October 13, 2005) was previously prepared pursuant to CEQA, which identified “air quality” as the only environmental topic that might be adversely affected by the current rule. Since the currently proposed project would be within the scope of what was analyzed in the previous Final EA that was circulated for public review and comment, and subsequently certified, SCAQMD will rely on that previously certified Final EA pursuant to CEQA Guidelines §15153, because the

circumstances of the projects are essentially the same. Greenhouse gases and PM2.5 analyses were not prepared as part of the Final EA, but were evaluated and found not to be significant in an Initial Study (IS) prepared for the proposed project. Since the circumstances of the currently proposed project are essentially the same as those analyses in the October 25 Final EA, and the greenhouse gases and PM2.5 impacts were concluded to be less than significant, no additional reasonable alternatives or mitigations are required. A Notice to Rely was circulated and the Final EA was made available for public review and comment on the environmental analysis for a 30-day period from July 5, 2008 to August 28, 2008.

SOCIOECONOMIC ASSESSMENT

Staff will conduct a socioeconomic assessment on the final proposal for public review, which will be available 30 days prior to the public hearing.

DRAFT FINDINGS

Health and Safety Code Section 40727 requires the AQMD to adopt written findings of necessity, authority, clarity, consistency, non-duplication and reference.

Necessity

A need exists to amend Rule 1156 to ensure that fugitive dust and hexavalent chromium emissions from the storage and handling of clinker are minimized.

Authority

The AQMD Governing Board obtains its authority to adopt, amend, or repeal rules and regulations from California Health & Safety Code Sections 39002, 40000, 40001, 40702, and 40725 through 40728, and 41700, inclusive.

Clarity

The proposed amended rule has been written or displayed so that its meaning can be easily understood by persons directly affected by it.

Consistency

The proposed amended rule is in harmony with and not in conflict with or contrary to, existing statutes, court decisions or state or federal regulations.

Non-Duplication

The proposed amended rule does not impose the same requirements as any state or federal regulations. The amendment is necessary and proper to execute the powers and duties granted to, and imposed upon, AQMD.

Reference

By adopting the proposed amended rule, the AQMD Governing Board will be implementing, interpreting, and making specific the provisions of the California Health & Safety Code Sections 40000 (authority over non-vehicular sources), 40001 (rules to achieve ambient air quality standards), and 41700 (public nuisance).

ALTERNATIVE CONTROL MEASURES

Health and Safety Code Section 40440.5, subsection (c)(3) requires an analysis of alternative control measures. Staff conducted such an analysis for public review. Specifically, staff's original proposals (July 2008) of total enclosure was deemed infeasible due to significant costs, so the revised proposals herein were developed.

COMPARATIVE ANALYSIS

Health and Safety Code §§40727.2 requires a written analysis comparing a proposed rule or amendment with existing federal, State and District regulations. Health and Safety Code §§40727.2, subsection (c) and (d) further require the analysis to review averaging provisions, operating parameters, work practice requirements, and monitoring, reporting and recordkeeping requirements associated with existing applicable rules and proposed regulations. A comparative analysis for the adoption of Rule 1156 in 2005 was conducted and is included in Appendix A. The comparative analysis will be updated to reflect the final staff proposal.

CONCLUSION

The current proposed amendments would reduce particulate as well as hexavalent chromium fugitive dust emissions generated from the storage and handling of clinker material at significantly less cost compared to the initial proposal introduced in July 2008; therefore, the current proposed amendments would minimize adverse economic impacts on the cement manufacturing facilities. PAR 1156 would achieve reductions of 0.04 tpd for PM10 and 0.09 tpd for PM at the overall control costs estimated to be in the range of \$2.6 to \$3.2 million. The cost-effectiveness is estimated to be \$4,000 to \$5,000 per ton of PM reduced and \$9,000 to \$11,000 per ton of PM10 reduced.

PAR 1156 would increase public health protection through additional fugitive dust control measures (i.e., total enclosure for clinker storage and handling occurring within 1,000 feet from, and inside, the property line, enclosure of an existing barn and wind fence/barrier in addition to tarping for clinker storage and handling located more than 1,000 feet from, and inside, the property line), and ambient monitoring effort.

REFERENCES

AQMD, 2004. Final Staff Report on Proposed Rule 1156 - Further Reductions of Particulate Emissions from Cement Manufacturing Facilities. November 2004.

AQMD, 2008. Attachment 1 from Dr. Barry W. Wallerstein's letter to the public dated May 6, 2008.

RESPONSE TO COMMENTS

Response to Comments

The following are comments and responses on the initial proposed amendment to Rule 1156 that was released for public review in July 2008.

Comment # 1: California Portland Cement Company (CPCC) is the only facility that would be significantly, unfairly, and unnecessarily impacted by the proposed amended rule (PAR) 1156, although none of the AQMD's studies identify levels of concern of hexavalent chromium (hexavalent chromium) in the vicinity of CPCC in Colton. TXI has been identified as the source of the elevated hexavalent chromium and has received associated violations for PM.

Response # 1: On the average, hexavalent chromium content in samples taken adjacent and downwind of CPCC in spring 2008 are lower than TXI (0.35 ng/m³ and 1.58 ng/m³, respectively), and hexavalent chromium content of CPCC clinker is about 20% lower than TXI. However, in 9 samples taken between 2/12/08 and 4/3/08, the 24-hour hexavalent chromium concentrations were close to or exceeded 1 ng/m³. Similar hexavalent chromium concentrations occurred again during certain times in July and September 2008.

To ensure reductions of particulate emissions from cement manufacturing facilities and to limit exposure to PM10, as well as hexavalent chromium, while addressing the issue of financial hardship raised by CPCC, AQMD staff has revised their proposals.

The current proposed amendment would require total enclosure of clinker storage and handling conducted within 1,000 feet from, and inside, a facility's property line. For clinker storage and handling activities that occur more than 1,000 feet from, and inside, a facility's property line, PAR 1156 would allow the use of alternatives, such as a three-sided barrier covered with a roof and wind fence for active, barn-type storage; tarp and barrier/wind fence for other active piles; and tarp for inactive piles. The proposal would also require ambient monitoring to measure PM10 and hexavalent chromium at fence-lines and includes corrective actions should the monitoring indicate elevated levels of PM10 or hexavalent chromium. The revised proposal will significantly reduce costs to CPCC, while still reducing particulate emissions and being public health protective.

Comment # 2: CPCC proposes language that "the rule does not apply to operations and materials handling and transporting that are regulated by Rules 1157 and 1158" and that facilities subject to Rules 1156, 1157, and 1158 shall be consistent with the definition of affected facilities as defined in 40 CFR Part 63 and Part 60.

Response # 2: Rule 1156 was specifically developed to reduce particulate emissions from cement manufacturing facilities. Since Rule 1156 only focuses on equipment

and operations that are typical for cement manufacturing facilities, it is not necessary to exclude other types of industries from the rule.

Comment # 3: CPCC suggests the deletion of “equal to” in the opacity limits set forth in (d)(1)(A) and (d)(1)(B) because the added language actually makes the requirements more stringent instead of clarifying them.

Response # 3: Staff agrees that the added language “equal to” would strengthen the opacity limits. Although these opacity limits are consistent with the thresholds in EPA’s Opacity Test Method 9, staff has revised the language to maintain the opacity thresholds in previously adopted Rule 1156.

Comment # 4: CPCC suggests the added terms “on-road” before “trucks” and “commercial” before “modes of material transportation” in (d)(2)(A) for clarification purposes.

Response # 4: During the initial Rule 1156 development process, staff worked closely with the cement manufacturing facilities to develop such language, which is very specific to the facility’s activities and operations; therefore, it should not be revised.

Comment # 5: CPCC suggests that clinker storage piles located within 1,000 ft inside of the fence line of a cement manufacturing facility be enclosed, and that the alternatives, such as tarping, 3-way barrier, wind fence, or stabilizing can be applied to clinker storage piles located 1,000 ft or more from the fence line.

Response # 5: After further consideration, staff has revised the proposed amendment. To reduce PM and hexavalent chromium fugitive dust emissions from the storage and handling of clinker material that occur further than 1,000 feet from, and inside, a facility’s property line, the current proposal would allow the use of: (1) a three-sided barrier covered with a roof and wind fence of a maximum 20% porosity for active, barn-type storage; (2) tarp and extended wind fence with at least 5-foot freeboard for active piles that are immediately adjacent to the above mentioned covered barrier; and (3) tarp and barrier/wind fence with at least 5-foot freeboard and extended at least 20 feet beyond the active portion of a pile for other active piles.

For inactive clinker storage, PAR 1156 would alternatively allow tarping only, provided that records of inactive status are maintained.

The majority of emissions would be reduced at a significant cost reduction compared to the initial staff proposal. This will minimize adverse economic impacts on cement manufacturing facilities. The addition of ambient monitoring and required corrective actions if certain emission levels are exceeded will provide public health protection.

Comment # 6: CPCC proposes a change in (d)(5)(B) from a prohibition on the open clinker storage piles to a set of stringent control measures that would achieve nearly the same dust control at a significantly reduced cost. CPCC believes that its existing dust control measures are sufficient to reduce health risks to the surrounding community, and that the proposed enclosure requirement would be infeasible to CPCC since it has only 20 years left of identified quarry reserves. In addition, CPCC also believes that the elimination of outdoor clinker piles would increase NOx emissions.

Response # 6: Please see response to comment # 5.

Comment # 7: CEQA and socioeconomic assessment should be conducted to analyze the impacts of PAR 1156.

Response # 7: CEQA relies on the previous document prepared relative to the initial adoption of Rule 1156 in November 2005. Cost and cost-effectiveness are included in the staff report. Socioeconomic analysis will also be prepared.

Comment # 8: The current PAR 1156 is strongly supported. Natural Resources Defense Council and the communities also believe that further investigation and control of other sources of PM emissions from cement manufacturing facilities are needed to protect the surrounding communities. Steps should be taken to remediate past pollution of land and water from cement deposition.

Response # 8: Staff has been evaluating different scenarios, including: (1) enclosure of clinker and non-clinker storage and handling, (2) enclosure of only clinker material; (3) tarping and wind fencing other active clinker piles in addition to solid wall enclosure of existing barn-type storage with and without enclosing non-clinker material; and (4) tarping and wind fencing other active clinker piles in addition to wind fence enclosure of existing barn-type storage with and without enclosing non-clinker material. Public health protection, cost, technical feasibility, impacts on the industry, and emission reductions are being considered. The on-going monitoring conducted at the Rubidoux station and in the vicinity of TXI and CPCC to identify sources of emissions within the facilities and the change in emissions generation pattern, plus the proposed wind, particulate and hexavalent chromium monitoring, will provide additional information.

Comment #9: Further reduction in both criteria and toxics pollutants, as well as greenhouse gases emissions, can be attained through the adoption of cleaner fuels and limited clinker production.

Response #9: PAR 1156 will reduce PM and hexavalent chromium fugitive dust from cement manufacturing facilities. Other reductions through clean fuel or limiting clinker production are beyond the scope of this amendment.

Comment #10: We strongly support the enclosure requirement of all clinker storage and handling since it will promote a healthful local environment.

Response #10: As noted in the response to comment #5, the initial staff proposal may have resulted in the early enclosure of one of the cement manufacturing facilities. There are two facilities in the District that would have been potentially subject to full enclosure; however, TXI no longer stores and handles their clinker material in the open, and will not be allowed to have open storage and handling of clinker material in the future.

CPCC, under the revised proposal would not be subject to full enclosure, unless hexavalent chromium monitoring levels are exceeded. Staff believes the revised proposal is a good balance. It will achieve the majority of the particulate and hexavalent chromium reductions at significantly less cost by adding several control techniques to reduce fugitive dust, including monitoring and corrective actions.

**APPENDIX A –
Comparison between PR1156 and Other Requirements for Cement Manufacturing**

Appendix A - Comparison between PR1156 and Other Requirements for Cement Manufacturing

RULE 1156	AQMD RULE 1112.1	NSPS -- 40CFR PART 60 SUBPART F	NESHAP -- 40 CFR PART 63 SUBPART LLL	COMPLIANCE ASSURANCE MONITORING 40CFR PART 64
APPLICABILITY				
<p><u>Equipment/Operation:</u> Kiln, clinker cooler, raw mill system, finish mill system, raw mill dryer, raw material storage, clinker storage, conveyor transfer points, bagging, bulk loading and unloading systems; and operations that generate fugitive dusts.</p>	<p><u>Equipment/Operation:</u> Cement kiln and clinker cooler for dry-process manufacturing of gray cement.</p>	<p><u>Equipment/Operation:</u> Kiln, clinker cooler, raw mill system, finish mill system, raw mill dryer, raw material storage, clinker storage, conveyor transfer points, bagging and bulk loading and unloading systems</p> <ul style="list-style-type: none"> • Equipment constructed or modified after 7/17/1971. 	<p>Facility is a major source or area source of air toxics;</p> <p><u>Equipment/Operation:</u> Kiln, clinker cooler, raw mill system, finish mill system, raw mill dryer, raw material storage, clinker storage, conveyor transfer points, bagging and bulk loading and unloading systems</p> <ul style="list-style-type: none"> • Existing equipment or equipment constructed or reconstructed after 9/11/1998. 	<p>Equipment that:</p> <ul style="list-style-type: none"> • is subject to emission standard (e.g. SIP approved rules but not 40 CFR Part 60 or Part 63 rules); • uses a control device, and • 3) has pre-control emissions that are equal to or more than the major source threshold (e.g. 70 tpy PM10)
COMPLIANCE DATE				
<p>By December 2006.</p> <p><u>Facility Emissions</u></p> <p>Reduce 2003 baseline emissions by 50% by 2006.</p>	<p>On and after February 1986.</p>	<p>On or after completion of the initial performance test.</p>	<ul style="list-style-type: none"> • For existing equipment: 6/14/2002 • For new or modified equipment: Upon startup 	<p>If the Title V application is complete before 4/20/1998, a CAM plan is due as part of the application for the Title V permit renewal, or as part of the application for a significant permit revision.</p>

RULE 1156	AQMD RULE 1112.1	NSPS -- 40CFR PART 60 SUBPART F	NESHAP -- 40 CFR PART 63 SUBPART LLL	COMPLIANCE ASSURANCE MONITORING 40CFR PART 64
PERFORMANCE STANDARDS				
<p><u>All Equipment</u> Opacity ≤ 10%</p> <p><u>Kilns and Clinker Coolers</u> PM₁₀ ≤ 0.05 lb/ton clinker</p> <p><u>All Baghouses</u> Outlet concentration ≤ 0.005 grain/dscf ; or 99.5% capture efficiency and 99.5% collecting efficiency</p> <p><u>Other Equipment</u></p> <ul style="list-style-type: none"> • Opacity ≤ 10% process equipment via method 9 • Opacity < 20% open piles & roadways via method 9B • Visible emissions not to exceed 100 ft. plume in any direction <p><u>Other Requirements</u></p> <ul style="list-style-type: none"> • Enclosed storage piles, crushers, screens, mills, conveying systems, and other equipment. • Pave roads, use chemical dust suppressants, limit vehicle speed, street sweeping, and facility cleanup. 	<p><u>Kilns and Clinker Coolers Combined</u></p> <ul style="list-style-type: none"> • PM ≤ 0.4 lb/ton feed when kiln feed rates <75 ton/hr • PM ≤ 30 lb/hr when kiln feed rates >75 ton/hr 	<p><u>Kilns</u></p> <ul style="list-style-type: none"> • PM ≤ 0.3 lb/ton feed dry basis • Opacity ≤ 20% <p><u>Clinker Coolers</u></p> <ul style="list-style-type: none"> • PM ≤ 0.1 lb/ton feed dry basis • Opacity ≤ 10% <p><u>Other Equipment</u> Opacity ≤ 10%</p>	<p><u>Kilns:</u></p> <ul style="list-style-type: none"> • PM ≤ 0.3 lb/ton feed dry basis • Opacity ≤ 20% <p><u>Clinker Coolers</u></p> <ul style="list-style-type: none"> • PM ≤ 0.3 lb/ton feed dry basis • Opacity ≤ 10% <p><u>Other Equipment</u> Opacity ≤ 10%</p> <p><u>Other Requirements</u> THC < 50 ppmvd as propane corrected to 7% oxygen</p> <p>D/F < 8.7 x 10⁻¹¹ grain/dscf corrected to 7% oxygen</p>	<p>Not specified performance standards.</p>

RULE 1156	AQMD RULE 1112.1	NSPS -- 40CFR PART 60 SUBPART F	NESHAP -- 40 CFR PART 63 SUBPART LLL	COMPLIANCE ASSURANCE MONITORING 40CFR PART 64
MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS				
<ul style="list-style-type: none"> • Annual source testing for kilns and clinker coolers • Source test at least 10 equipment vented to baghouses which are in the top 20% PM10 emitters at the facility. • Monitor operating parameters of baghouses such as flue gas flow rates and pressure drop across filters. • Keep all records to demonstrate compliance for at least 5 years. • Report annual emissions for all process equipment, open storage piles and vehicle traffic. • Source Test Methods: AQMD Method 5.1, 5.2, 5.3 or EPA Method 5 modified; or EPA Method 201A and 202 for PM10. 	<p>Not specify.</p>	<ul style="list-style-type: none"> • Continuous opacity monitoring for kilns and clinker coolers and any bypass • Record visible emissions at least three 6-minute periods each day, and records maintained for 2 years. • Record daily production rates and kiln feed rates • Initial performance test is required to be conducted. • Excess emissions must be reported semi –annually. • Malfunctions must be reported. • Semiannual report of excess emissions and malfunctions • Source Test Methods: EPA Method 5 for PM and Method 9 for opacity. 	<ul style="list-style-type: none"> • Initial performance test is required to determine compliance with the emission limitation and to establish the operating limits • Performance test is required every 30 months – 5years • Source Test Methods: EPA Method 5 for PM and Method 9 for opacity. 	<p>A CAM plan accompanying a Title V permit must:</p> <ul style="list-style-type: none"> • Describe indicators to be monitored; • Describe indicators' ranges; • Describe performance criteria for monitoring; • Provide justification for the use of the indicators, ranges, and monitoring approach; • Provide emission test data, if necessary; and • Provide an implementation plan. <p>A Title V permit must:</p> <ul style="list-style-type: none"> • Include approved monitoring approach, • Have specific definitions of exceedence or excursion; • Include reporting and recordkeeping requirements; and • Indicate if source testing is required. <p>Source Test Methods: Not specified.</p>

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