

Order of Final Rulemaking
Department of Environmental Protection
Environmental Quality Board
25 Pa. Code Chapter 145, Subchapter C

The Environmental Quality Board (Board) amends Subchapter C (relating to emissions of NOx from cement manufacturing) under Chapter 145 (relating to interstate pollution transport reduction) as set forth in Annex A.

This order was adopted by the Board order at its meeting of _____, 2010.

A. Effective Date

These amendments will be effective upon publication in the *Pennsylvania Bulletin* as final rulemaking.

These final-form amendments will be submitted to the United States Environmental Protection Agency (EPA) as a revision to the Pennsylvania State Implementation Plan (SIP).

B. Contact Persons

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C. Statutory Authority

This final-form rulemaking is being adopted under the authority of section 5(a)(1) of the Air Pollution Control Act (35 P.S. §4005(a)(1)), which grants to the Board the authority to adopt regulations for the prevention, control, reduction and abatement of air pollution.

D. Background and Summary

The purpose of this final-form rulemaking is to reduce emissions of nitrogen oxides (NOx) from cement kilns in order to reduce levels of ground-level ozone. Ground-level ozone is not directly emitted by pollution sources, but is created as a result of the chemical reaction of NOx and volatile organic compounds in the presence of light and heat. The reduction of NOx emissions will also help protect the public health from high levels of fine particulate matter (PM2.5), of which NOx is a precursor component. Fine particulates, as well as ozone, are health hazards. The reduction of NOx emissions also reduces visibility impairment and acid deposition.

When ground-level ozone is present in concentrations in excess of the Federal health-based standards, public health is adversely affected. The EPA has concluded that there is an association between ambient ozone concentrations and increased hospital admissions for respiratory ailments, such as asthma. Further, although children, the elderly and those with respiratory problems are

most at risk, even healthy individuals may experience increased respiratory ailments and other symptoms when they are exposed to ambient ozone while engaged in activity that involves physical exertion. Though these symptoms are often temporary, repeated exposure could result in permanent lung damage. The implementation of additional measures to address ozone air quality nonattainment in this Commonwealth, including the reduction of NO_x emissions from cement kilns, is necessary to protect the public health.

This Commonwealth, along with the States of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont and Virginia, and the District of Columbia, are members of the Ozone Transport Commission (OTC), which was created under Section 184 of the Federal Clean Air Act, 42 U.S.C. § 7511c, to develop and implement regional solutions to the ground-level ozone problem in the Northeast and Mid-Atlantic regions. To date, states from the OTC, including this Commonwealth, have established a number of regulatory programs to reduce ozone precursor emissions, including programs related to portable fuel containers, architectural and industrial maintenance coatings and consumer products. Consistent with its strategy to achieve equitable ozone precursor emission reductions from all industrial sectors, this Commonwealth, along with other OTC states, has met with representatives of the cement industry to discuss reductions of NO_x emissions from their kilns.

In this Commonwealth there are 21 cement kilns, which in 2005 emitted 12,967 tons of NO_x emissions in this Commonwealth. Of these 21 kilns in this Commonwealth, 14 of them are “long” kilns. These are older technology kilns that are less energy efficient than preheater kilns and the newest technology, pre-calciner kilns. The higher energy efficiencies of the preheater and precalciner kilns result in inherently lower NO_x emissions than those from long wet and dry kilns, per ton of product.

Control technologies are readily available to achieve NO_x emission reductions of greater than 20% from cement kilns. These technologies include: conversion to indirect firing systems with low-NO_x burners with approximately 20-30% reduction; mid-kiln firing of whole tires in long kilns with approximately 20-40% reduction; staged combustion in precalciner kilns with approximately 30-45% reduction; selective noncatalytic reduction (SNCR) in precalciner kilns with approximately 30-70% reduction; and selective catalytic reduction (SCR) with approximately 80-90% reduction. SNCR has been used on preheater kilns and has been proposed for long kiln applications. All of these technologies, except SCR, are demonstrated on kilns in the United States.

The final-form amendments will allow a number of this Commonwealth’s cement manufacturers to develop and implement compliance strategies without the need for widespread installation of control equipment on the older technology long kilns, which will likely be replaced with more energy efficient technologies, like preheater or precalciner technologies, over time. An additional compliance option allows the purchase of Clean Air Interstate Rule (CAIR) NO_x allowances to account for emissions in excess of the proposed limits, as a near term compliance option.

The Department of Environmental Protection (Department) worked with the Air Quality Technical Advisory Committee (AQTAC) in the development of these final-form regulations.

At its October 30, 2008, meeting, the AQTAC concurred with the Department's recommendation that the Board consider the adoption of these final-form regulations, with certain changes. These recommended changes to the final-form rulemaking included requiring written approval from the Department for substituted monitoring data and clarification regarding how cement kilns that commence operation after the effective date of adoption of the final-form rulemaking may determine their emissions to average. The change recommended by the AQTAC to require written approval by the Department for substituted monitoring data has been made to the final-form rulemaking. The change concerning the emissions averaging provision for new kilns was considered by the Department, and a decision was made to delete from the final-form rulemaking the emissions averaging provision for new kilns commencing operation after the effective date of adoption of the final-form rulemaking. The Department maintains that allowing new cement kilns to average their emissions with existing cement kilns in order to meet the regulatory obligation for the existing kilns is inconsistent with the Best Available Technology (BAT) regulatory obligation for new cement kilns, which is to control emissions to the maximum degree possible. Therefore, the Department determined that the emissions averaging provision for new cement kilns in the proposed rulemaking is inconsistent with existing regulatory obligations, and this provision has been deleted from the final-form rulemaking.

The Department also conferred with the Citizens Advisory Council (CAC) concerning the final-form rulemaking on October 27, 2008. The CAC concurred with the Department's recommendation that the Board consider the adoption of these final-form regulations.

To the extent that this final-form rulemaking is more stringent than any corresponding Federal requirements, the Board has determined that this final-form rulemaking is reasonably necessary to attain and maintain the ozone and PM_{2.5} National Ambient Air Quality Standards (NAAQS).

E. Summary of Comments and Responses

The rulemaking amendments that were proposed in the *Pennsylvania Bulletin* on April 19, 2008 (38 *Pa.B.* 1838), under 25 *Pa. Code* Chapter 129 (§§ 129.401 – 129.405 (relating to emissions of NO_x from cement manufacturing)) have been deleted at final and in the final-form rulemaking the requirements are incorporated under Chapter 145, Subchapter C, to amend the cement kilns requirements that were effective December 11, 2004 (34 *Pa.B.* 6509) (§§ 145.141 – 145.144 (relating to emissions of NO_x from cement manufacturing)), and amended effective April 12, 2008 (38 *Pa.B.* 1705) (§ 145.143 (relating to standard requirements)). The decision to incorporate the final-form amendments for cement kilns in Chapter 145, Subchapter C, was editorial because the existing provisions in Subchapter C regulate emissions of NO_x from cement kilns. Where appropriate, responses to comments reflect the nature of this editorial change.

Commentators support the goal of the proposed regulation to lower ozone in this Commonwealth and support efforts in reducing NO_x and ozone-related pollutants to reduce ground-level ozone. The Board appreciates the commentators' support of this rulemaking. The final-form rulemaking is consistent with regulatory initiatives recommended by the OTC to address transport of ozone precursor emissions, including NO_x, throughout the Ozone Transport

Region (OTR). These measures are reasonably necessary to attain and maintain the health-based 8-hour ozone NAAQS in this Commonwealth.

A commentator supports the facility-wide emissions averaging compliance option among kilns under common control of the same owner in this Commonwealth. The Board appreciates the commentator's support to allow facility-wide emissions averaging as a compliance option. The Department is allowing this option to provide cement kiln owners and operators with greater flexibility to demonstrate compliance with the allowable NO_x emission limits.

The commentator supports the use of CAIR NO_x Ozone Season allowances as an economical compliance alternative. The Board appreciates the commentator's support of allowing the use of CAIR NO_x Ozone Season allowances as part of the proposed rule's compliance alternatives available to cement kiln owners and operators. The rulemaking amendments that were proposed in the *Pennsylvania Bulletin* on April 19, 2008 (38 *Pa.B.* 1838), under §§ 129.401 – 129.405, have been deleted at final and in the final-form rulemaking the requirements are incorporated under Chapter 145, Subchapter C, as amendments to the cement kilns requirements that were effective December 11, 2004 (34 *Pa.B.* 6509), under §§ 145.141 – 145.144 and amended effective April 12, 2008 (38 *Pa.B.* 1705), under § 145.143. The use of CAIR NO_x Ozone Season allowances as a compliance strategy is preserved in the final-form rulemaking under existing § 145.143(d), which provides that the owners or operators of Portland cement kilns shall surrender CAIR NO_x Ozone Season and CAIR NO_x annual allowances if the actual NO_x emissions from their kiln or kilns exceed the allowable NO_x emissions calculated for the kiln or kilns.

A commentator believes that the proposed emission limits are derived from a 60% emissions reduction (from uncontrolled levels) based on SNCR control technology that should not be applied to wet kilns. The commentator believes that NO_x limits for wet kilns should be based on a 50% reduction from uncontrolled levels because a 50% reduction from uncontrolled levels of NO_x is consistent with the EPA cement New Source Performance Standard (NSPS) rule that was proposed in the Federal Register on June 16, 2008 (73 FR 34072). The Board disagrees with the commentator. The Board proposed emission limits based on the OTC recommended limits. The Board is not requiring a specific reduction efficiency from the installation of a SNCR should an affected cement owner or operator decide to install a SNCR in order to comply with the emission limits proposed.

A commentator urges the addition of a compliance option which allows a cement company to establish a site-specific emission limit in tons of NO_x during the ozone season. The Board disagrees with the commentator. A site-specific emission limit based on a kiln's applicable emission factor and its clinker production is in effect a cap-based emission limit rather than a rate-based emission limit. The final-form rulemaking emission limits are rate-based, not cap-based, and are emission limits recommended by the OTC.

Commentators want the Board to provide the basis for limiting new cement kilns subject to the proposed regulation to a lower emission limit than existing kilns, as specified under proposed § 129.404(d) (relating to compliance demonstration). Prior to publishing the proposed rulemaking for public comment on April 19, 2008 (38 *Pa.B.* 1838), the Board reviewed a number of technical documents and concluded that new cement kilns should have a lower emission limit than existing kilns. Moreover, when the OTC recommended to the states the NO_x

emission limits for cement kilns in Resolution 06-02 of the Ozone Transport Commission Concerning Coordination and Implementation of Regional Ozone Control Strategies for Certain Source Categories, adopted June 7, 2006 (OTC Resolution 06-02), two separate limits were proposed for preheater and precalciner kilns, 2.36 lb NO_x/ton clinker and 1.52 lb NO_x/ton clinker, respectively (see page 2, OTC Resolution 06-02, June 7, 2006). The Board chose to adopt the 2.36 limit for both preheater and precalciner kilns because the Commonwealth has only one existing precalciner kiln, which is of an early precalciner kiln technology that is more like a preheater kiln from an energy use perspective, and to require that new cement kilns meet the limit of 1.52 lb NO_x/ton clinker. Under the EPA's proposed NSPS rule for Portland cement kilns, the EPA found that according to the industry, all new kilns will be preheater or precalciner kilns (73 FR p. 34075). Therefore, proposing to limit new cement kilns, assumed to be precalciner, to 1.52 lb NO_x/ton clinker is in line with the NO_x limits for new cement kilns proposed by the EPA on June 16, 2008. The annual NO_x emission limit proposed in the NSPS by the EPA is 1.50 lb/ton clinker (see 73 FR pages 34074, 34075 and 34089). The Board maintains that all new kilns in this Commonwealth would be the precalciner type, and would therefore be required to meet not only the NO_x limit established in the EPA's final NSPS but also the BAT regulatory requirement for new cement kilns, which is to control emissions to the maximum degree possible. The NSPS will apply to all new cement kilns that commence operation in this Commonwealth. Therefore, the Board determined that the NO_x emission limit for new cement kilns in the proposed rulemaking is unnecessary, and this requirement has been deleted from the final-form regulation.

A commentator finds that the Board should provide the technical basis for the allowable emission limits and explain the data used to make the determination. If the emission limits are based upon an OTC resolution, then the Order to the final-form regulation should compare the Commonwealth's program with how other OTC states are complying with this resolution. The Board agrees. The NO_x emission limits for cement kilns in the proposed rulemaking are those recommended by the OTC. The technical basis for the emission limits are based on OTC Resolution 06-02. This resolution used data and analysis from the following report prepared for the OTC: *Identification and Evaluation of Candidate Control Measures, Final Technical Support Document*, prepared by MACTEC Federal Programs, Inc. (February 28, 2007). The Board independently reviewed this information and concurred with the data and the decisions in the OTC resolution that recommended the emission limits. Regulations based on the OTC recommendations are being pursued by Maryland, New York and this Commonwealth. Maine has one cement kiln permitted to convert to a dry process, and this converted kiln will be subject to Best Available Control Technology, which is typically more stringent than requirements for existing sources, under the Prevention of Significant Deterioration Program. Maryland, Maine, New York and this Commonwealth are the only states in the OTR that have cement kilns. Therefore, it is not anticipated that the final-form rulemaking will place cement plants in this Commonwealth at a competitive disadvantage.

The commentator questioned if the cement emission limits proposed by the EPA on June 16, 2008, impact the proposed regulation and will they result in additional changes to the Commonwealth's NO_x emission limits in the future. The NSPS proposed by the EPA on June 16, 2008 (73 FR 34072), caused a minor change to the Board's proposed rulemaking. The EPA proposed an annual NO_x emission limit of 1.50 lb/ton clinker. (See 73 FR pages 34074, 34075 and 34089.) The Board maintains that all new kilns in this Commonwealth would be the precalciner type, and therefore must meet not only the NO_x limit established in the EPA's final

NSPS but also the BAT regulatory requirement for new cement kilns, which is to control emissions to the maximum degree possible. Therefore, the Board determined that the NOx emission limit for new cement kilns in the proposed rulemaking is unnecessary and this requirement has been deleted from the final-form rulemaking. Additionally, the decision was made to delete from the final-form regulation the emissions averaging provision for existing kilns with new kilns commencing operation after the effective date of adoption of the final regulation. The Board maintains that allowing new cement kilns to average their emissions with existing cement kilns in order to meet the existing kilns' regulatory obligation is inconsistent with the BAT regulatory obligation for new cement kilns, which is to control emissions to the maximum degree possible. Therefore, the Board determined that the proposed regulation's emissions averaging provision for new cement kilns is inconsistent with existing regulatory obligations, and this provision has also been deleted from the final-form regulation.

The commentator notes that while other sections of the proposal mention an exact date for compliance with emission requirements, §§ 129.402(a) and (b) (relating to emission requirements) and 129.404(a)(1), (c)(1), (d) and (g)(1) refer to the period of May 1 through September 30. The final-form regulation should explain the need for this distinction and how it applies to each of the relevant sections listed above. The Board disagrees with the commentator that the final-form regulation should explain the distinction. The compliance period for determining allowable emissions of NOx, regardless of year, is from May 1 through September 30. The requirements under proposed §§ 129.402(a) and (b), (which have been moved to paragraphs 145.143(b)(1) and (2) at final) and 129.404(a)(1), (c)(1), (d) and (g)(1), (which have been both moved under new paragraph 145.145(a)(1) (relating to compliance demonstration and reporting requirements) and retained under existing subsections 145.143(d), (e) and (h)(1) at final) refer to the first year of the compliance period under the regulation, and each year thereafter.

Commentators are concerned about the ability of the Board to move forward with the regulation if the Court vacated the CAIR budget and allowance system for NOx emissions in Pennsylvania and other states. The decision by the Court in *North Carolina v. EPA* only addressed the EPA's CAIR (70 FR 25162, May 12, 2005), and did not address NOx emission limits for cement kilns. On December 23, 2008, the Court decided to remand the EPA's CAIR rather than to vacate, leaving it in place until the EPA revises it. The final Federal rule, expected in 2011, must be revised to be consistent with the Court's July 11, 2008, decision in *State of North Carolina v. Environmental Protection Agency*, 531 F.3d 896 (D.C. Cir. 2008). Therefore, the Board's statutory authority to propose a rulemaking to control NOx emissions from cement kilns is not limited and the Board may move forward with a final rulemaking. On May 23, 2008, the Department submitted to the EPA a SIP revision for the Department's CAIR regulatory requirements under §§ 145.201-145.223 (relating to CAIR NOx and SO₂ trading programs), effective April 12, 2008 (38 *Pa.B.* 1705), that provide for a CAIR NOx Ozone Season Trading Program and a CAIR NOx Annual Trading Program. The Department's CAIR regulation also included amendments to existing § 145.143 to require the owners or operators of Portland cement kilns to surrender CAIR NOx Ozone Season and CAIR NOx annual allowances if their actual NOx emissions exceed their allowable NOx emissions. The EPA approved the Department's CAIR regulation as a SIP revision effective December 10, 2009 (74 FR 65446).

A commentator suggests that, based on the CAIR vacatur, if the regulation requires substantial changes, to consider submitting an Advance Notice of Final Rulemaking or

publishing the changes as a new proposed regulation in the *Pennsylvania Bulletin*. The final-form rulemaking will not require substantial changes as a result of the initial vacatur of the EPA's CAIR on July 11, 2008. On December 23, 2008, the Court decided to remand the EPA's CAIR rather than to vacate, leaving it in place until the EPA revises it. The final Federal rule, expected in 2011, must be revised to be consistent with the Court's July 11, 2008, decision in *State of North Carolina v. Environmental Protection Agency*, 531 F.3d 896 (D.C. Cir. 2008). On May 23, 2008, the Department submitted to the EPA a SIP revision for the Department's CAIR regulation, including requirements under §§ 145.143 and 145.201-145.223, effective April 12, 2008 (38 *Pa.B.* 1705), that provides for a CAIR NOx Ozone Season Trading Program and a CAIR NOx Annual Trading Program. The EPA approved the Department's CAIR regulation as a SIP revision effective December 10, 2009 (74 FR 65446). The Board believes that the approval of the CAIR NOx allowance provisions as a revision to the Commonwealth's SIP will preserve the requirement proposed under subsection 129.404(c) on April 19, 2008 (38 *Pa.B.* 1838) for the surrender of CAIR NOx allowances if the actual NOx emissions from a kiln exceed its allowable NOx emissions.

Commentators support the concept of NOx trading, and would favor removing the requirement for being "under common control of the same owner or operator in this Commonwealth" from the system-wide averaging section of the rulemaking. The Board disagrees. The option to demonstrate compliance with the emission limits by averaging the NOx emissions of several cement kilns under the common control of the same owner or operator in this Commonwealth provides flexibility to the cement kiln owners and operators in this Commonwealth with more than one facility. Allowing multiple owners and operators of cement kilns in this Commonwealth to average their emissions in concert with each other in order to demonstrate compliance would essentially provide them the larger framework of an emissions trading program, which is beyond the scope of the final-form rulemaking provision to provide them an emissions averaging option.

A commentator believes that the use of different types of control technologies to achieve NOx emissions greater than 20% implies that facilities can use these technologies without the need for a permitting process. It is not the intent of the Board to imply that there is not a need for a permitting process for the use of NOx emission control technologies. The permitting requirements for the installation of a control technology will be determined in accordance with Subchapter B (relating to plan approval requirements) of 25 *Pa Code* Chapter 127 (relating to construction, modification, reactivation and operation of sources). The Department has several permit streamlining procedures in place, and plan approval applications are always acted on by the Department as expeditiously as possible.

A commentator thinks that the permitting process for installing the NOx control technologies to achieve the emission results of the proposed rulemaking should be streamlined. The authorizations should be issued within 30 days after an application is submitted. The Board disagrees. The permitting requirements for the installation of a control technology will be determined in accordance with the provisions under Chapter 127, Subchapter B. The Department has several permit streamlining procedures in place, and plan approval applications are always acted on by the Department as expeditiously as possible.

Commentators think the proposed rule contains punitive and unreasonable data substitution provisions for invalid data by substituting missing data with data calculated using

the potential emission rate for the kiln, or with the highest valid 1-hour emission value. The Board recognizes that substituted data should be representative of the actual emissions from the source during the time frame in question and not punitive in nature. The data substitution language in the final-form regulation has been modified to ensure that representative data is substituted while maintaining consistency with the procedures outlined in the Department's Continuous Source Monitoring Manual (DEP 274-0300-001).

A commentator believes that all kilns subject to the proposed rule will be subject to Title V reporting and compliance certification requirements, and additional reporting requirements are unnecessary and only add to the administrative burden. The Board disagrees and does not believe that maintaining records of daily clinker production will present a significant inconvenience to an owner or operator. Daily records may be needed to enable the Department to verify the relationship between NO_x emissions recorded by CEMS, and clinker produced during the compliance period of May 1 through September 30 of each year. The Board maintains that records sufficiently precise to quantify clinker produced by each kiln during that period are necessary to enable owners and operators to demonstrate compliance and determine allowances for surrender.

A commentator commented on whether it is feasible for a cement kiln to report their emission data to the Department by October 31, 2009, and then be required to surrender their NO_x allowances one day later, which is November 1, 2009. The Board disagrees with the commentator. The requirement to report information to the Department by October 31 of every compliance year is consistent with reporting requirements in the current regulation for cement kilns found under Chapter 145, Subchapter C. The affected owners and operators of cement kilns will know prior to October 31 of every compliance year whether they are required to surrender NO_x allowances, because they will have the entire month of October to calculate their emissions for the previous May 1 through September 30 compliance period and determine if and how many allowances they need to surrender by or on the succeeding November 1 to comply with the regulation.

The commentator commented that the proposed regulation requires cement kiln operators to report various information to the Department "by October 31, 2009," while other sections of the regulation require compliance with emission limits by September 30, 2009, and questioned if owners or operators of cement plants would be able to collect and deliver the reports within a month. The Board disagrees with the commentator. The requirement to report information to the Department by October 31 of each year is consistent with reporting requirements in the current regulation for cement kilns found under Chapter 145, Subchapter C.

The commentator commented that the proposed regulation requires cement kiln operators to submit a report to the Department "in a format approved, in writing, by the Department," and stated that this phrase is vague, and the final-form regulation should provide more detail on the type of format. The Board disagrees with the commentator. The requirement to submit a report to the Department in a format approved, in writing, by the Department, is a standard requirement. This requirement is found in many Board-approved rulemakings, and neither the Department nor the regulated sources have had problems understanding or complying with this requirement.

The commentator asked whether the cement kilns in this Commonwealth would be able to meet the May 1, 2009, compliance deadline. Due to the remand of the EPA's CAIR, and the Commonwealth's lengthy rulemaking process, the final-form regulation has an effective compliance date of May 1, 2011, for owners and operators of Portland cement kilns to meet the revised NOx emission limits. The date in the final-form regulation by which the CEMS must be installed, operating and maintained is April 15, 2011.

The commentator commented that the difference between subsections 129.404(b) and (c) is unclear and stated that the final-form regulation should clarify what circumstances necessitate compliance with subsection (c). The Board believes that the final-form regulation clearly specifies what circumstances would necessitate compliance with these subsections. Proposed subsection 129.404(c) has been deleted at final and the requirements retained under existing subsection 145.143(d). Proposed subsection 129.404(b) has been deleted at final and the same requirements are specified at final under new subsection 145.145(b) and in the definition of the new term "system-wide" under § 145.142 (relating to definitions). New subsection 145.145(b) lists three options to demonstrate compliance with the allowable NOx emission limits. Cement kiln owners or operators shall choose one compliance option from the three listed to use as the basis for determining the amount of allowable and actual NOx emissions from their kiln or kilns. Existing subsection 145.143(d) lists the requirements that a cement kiln owner or operator shall follow to surrender NOx allowances if the owner or operator determines, after calculating the amount of actual NOx emissions in accordance with the requirements under §§ 145.144 (relating to compliance determination) and 145.145, that the actual NOx emissions from the kiln or kilns exceed the amount of allowable NOx emissions for the kiln or kilns, determined in accordance with the requirements under subsection 145.143(b).

The commentator notes that subsection 129.404(b) refers to "a Portland cement kiln or multiple Portland cement kilns," and subsection (c) only references "a Portland cement kiln," and questions if the latter subsection should also apply to multiple kilns. The final-form rulemaking has been incorporated as amendments to the existing cement kilns regulation under Chapter 145, Subchapter C. The Board believes that the existing provisions of Subchapter C and the final-form regulation's amendments to Subchapter C accurately reflect that the final-form rulemaking applies to a Portland cement kiln or multiple kilns.

The commentator finds that subsection 129.404(e) requires cement kiln operators to surrender the required CAIR NOx ozone allowances by "November 1, 2009, and each year thereafter." Subsection (c) includes this surrender as a possible method of compliance. The final-form regulation should explain when each of these subsections would apply. The Board believes that the final-form regulation clearly specifies when the requirements are applicable. Proposed subsection 129.404(c) has been deleted at final and the requirements are retained under existing subsection 145.143(d). Proposed subsection 129.404(e) has been deleted at final and the requirements are retained under existing subsection 145.143(f). Existing subsection 145.143(d) lists the requirements that a cement kiln owner or operator shall follow to surrender NOx allowances if their actual NOx emissions exceed their allowable NOx emissions. Existing subsection 145.143(f) specifies the date by when a cement kiln owner or operator shall surrender the NOx allowances, if needed, to comply with subsection 145.143(d).

The commentator notes that paragraph 129.404(g)(1) explains how to determine the number of days of violation if the facility has excess emissions for the period May 1 through

September 30, and states that “each day in that period...constitutes a day in violation unless the owner or operator of the Portland cement kiln demonstrates that a lesser number of days should be considered.” The Board should explain what circumstances would warrant such consideration. The Board disagrees with the commentator. The Board maintains that it is the responsibility of the affected cement kiln owner to demonstrate to the satisfaction of the Department what circumstance or circumstances would warrant consideration of a lesser number of days in violation. The requirements that were proposed under paragraph 129.404(g)(1) and deleted at final are consistent with the requirements specified under existing paragraph 145.143(h)(1) for determining the number of days of violation in the current regulation for cement kilns found under Chapter 145, Subchapter C. At final these requirements are retained under existing paragraph 145.143(h)(1).

The commentator stated the program referenced in the Preamble, the Regional Compliance Assistance Program, did not appear to be defined by regulation or statute, and questioned how cement kiln owners and operators would access the program. The Board agrees with the commentator that the term “Regional Compliance Assistance Program” is not defined by regulation or statute. The term refers to the Department’s regional, or “field,” staff who regularly assist their respective facilities in understanding and complying with applicable Department regulations.

The commentator commented on the CEMS definition as it relates to an earlier, “original” definition that references Chapter 127, Subchapter E, and the proposed regulation’s reference to standards under Subchapter C (relating to requirements for source monitoring for stationary sources) of *25 Pa. Code* Chapter 139 (relating to sampling and testing), and suggests the Department explain why a different chapter of Title 25 of the Pennsylvania Code now applies to the proposed definition. The Board agrees with the commentator. The intent of the revision of the definition for the term “CEMS” in the proposed rulemaking under *25 Pa. Code* § 121.1 (relating to definitions) is for the CEMS definition to apply more broadly to the entire air quality regulatory program. However, subsequent to the close of the public comment period for the proposed cement kilns rulemaking, the Department proposed a revised definition of the term “CEMS” under § 121.1 in a proposed rulemaking as part of the amendments to the air quality fee schedules (see *39 Pa.B.* 6049, October 17, 2009). Therefore, the revision of the definition for the term “CEMS” under § 121.1 in the proposed cement kilns rulemaking was deleted at final, and the existing definition of CEMS under § 145.142 that applies to cement kilns has been retained in the final-form rulemaking. The existing CEMS definition under § 145.142 ensures that the monitoring equipment complies with the requirements under Chapter 139.

The commentator says that the final-form regulation should include a definition for “invalidated data.” In addition, the Board also should explain the difference between an “invalid data period” and an “alternative reporting period” as mentioned in subparagraph 129.403(b)(2)(ii) (relating to compliance determination). The Board disagrees with the commentator that the final-form regulation should include a definition for “invalidated data.” Conditions that render data invalid, and procedures for substituting the invalid data with valid data, are defined throughout the Continuous Source Monitoring Manual (DEP 274-0300-001). Owners or operators of each Portland cement kiln subject to this rule are familiar with those provisions, since they already operate Department-certified CEMS. An “alternative reporting period” is not specifically defined, since it is provided under proposed subparagraph

129.403(b)(2)(ii) (new subparagraph 145.144(b)(2)(ii) at final) as a means for an owner or operator to propose a unique alternative for the Department's consideration.

The commentator notes that paragraph 129.403(b)(1) refers to the "potential emission rate" for the cement kiln, but does not explain how this rate is determined. The final-form regulation should define this term. The Board disagrees. Proposed paragraph 129.403(b)(1) (new subsection 145.144(b) of the final-form regulation) has been modified to ensure that representative data is substituted and to maintain consistency with the procedures outlined in the Continuous Source Monitoring Manual. The modifications made to this section necessitated deleting the provision for the substitution of invalidated data with the potential emission rate for the kiln. Therefore, a definition for the term "potential emission rate" is not necessary.

The commentator says that subsection 129.403(c) states that Portland cement kiln operators shall submit quarterly reports of CEMS monitoring data in "pounds of NO_x emitted per hour," and thinks that this data should refer to "pounds of NO_x per ton of clinker." The Board disagrees with the commentator. The CEMS currently operated by the cement kiln owners and operators monitor NO_x emissions. A CEMS cannot measure tons of clinker produced, since by definition, a CEMS can only monitor emissions per unit of time.

The commentator finds that paragraph 129.404(c)(1) refers to "CAIR NO_x Ozone Season allowance," as defined in § 145.202 (relating to definitions), but this section of the Code does not include a definition for this term. The final-form regulation should provide the appropriate cross-reference in this subsection. The Board agrees with the commentator. The final-form rulemaking, in existing subsection 145.143(d), includes the appropriate Code of Federal Regulations reference for the definitions of the terms "CAIR NO_x Ozone Season allowance" and "CAIR NO_x allowance."

The commentator finds that subsection 129.405(c) (relating to recordkeeping) requires cement kiln owners or operators to maintain records for 5 years, and wonders how the Board determined this was an appropriate timeframe. Requiring regulated facilities to maintain records for 5 years is a standard requirement. This requirement is found in many Board-approved regulations, including §§ 127.11(b)(2) and 139.101(5) (relating to plan approval requirements; and general requirements). Regulated sources have had no problems complying with this requirement.

A commentator states their kilns are long dry-process cement kilns and are subject to the allowable emission limit of 3.44 lb NO_x/ton clinker. Their kilns are not preheater kilns because the systems do not contain a series or multiple cyclones as defined by the EPA in its 1993 NO_x Alternative Control Technologies Document (which was updated in September 2000). The commentator requests the Department establish its new NO_x limit during the ozone season at 3.44 lbs/ton clinker starting with the 2009 Ozone Season. The Board disagrees with the commentator. The comment is an implementation issue. The commentator must have discussions with the Department prior to the effective compliance date of the final-form regulation on how the final regulation will be implemented and complied with by their facility.

A commentator states that a provision to the proposed rule should be added to indicate that this rulemaking should supersede the case-by-case reasonably available control technology (RACT) determinations for cement kilns in this Commonwealth. The Board disagrees with the

commentator. Should the final rulemaking requirements be more stringent than a RACT requirement previously established on a case-by-case basis, complying with the final regulation's more stringent provisions would ensure compliance with the other RACT requirements.

A commentator states that the proposal requires owners or operators of cement kilns to "install, operate and maintain CEMS for NO_x emissions" by May 1, 2009. The commentator asks what the costs will be for owners and operators as a result of requiring this device to be installed on kilns in less than a year. The owners and operators of the cement kilns in this Commonwealth who are affected by the proposed rulemaking currently have a CEMS as part of the existing cement regulation requirement that limits NO_x emissions from cement kilns during the ozone season to 6.0 lbs/ton clinker (see subsection 145.143(b) (34 *Pa.B.* 6509, December 11, 2004)). The existing cement regulation was effective December 11, 2004 (34 *Pa.B.* 6509), with a compliance date of May 1, 2005 (see § 145.141 (relating to applicability)). Therefore, there are no costs to the owners and operators of affected cement kilns to install a CEMS. In the final-form rulemaking, the compliance date under new subsection 145.144(a) by when the CEMS must be installed, operating and maintained is April 15, 2011, for the owner or operator of a Portland cement kiln subject to new paragraph 145.143(b)(2). This date ensures that the CEMS equipment is running properly before May 1, 2011, which is the first day of the first compliance period for affected owners and operators for the determination of allowable emissions for Portland cement kilns using the new emission limits specified under the final-form rulemaking paragraph 145.143(b)(2).

F. Summary of Final Rulemaking

The final-form amendments delete the revisions proposed to the applicability date under § 145.141. The existing regulation containing NO_x emission limits for cement kilns in Chapter 145, Subchapter C, will remain in effect through April 30, 2011. The compliance date for the final-form amendments to Chapter 145, Subchapter C, is May 1, 2011. The compliance date in the final-form rulemaking by which the CEMS must be installed, operating and maintained is April 15, 2011.

The following regulatory language relating to new terms and definitions in § 145.142 was published at proposed rulemaking as amendments to § 121.1 to support the proposed amendments to Chapter 129. This final-form rulemaking removes those terms and definitions from § 121.1 and places them at § 145.142 to support the final-form amendments to Chapter 145, Subchapter C. Subsequent to the close of the public comment period for the cement kilns proposed rulemaking, the Board proposed for public comment a revised definition of the term "CEMS-continuous emissions monitoring system" under § 121.1 in a proposed rulemaking as part of the amendments to the air quality fee schedules (see 39 *Pa.B.* 6049, October 17, 2009). Therefore, the revision of the definition of the term "CEMS" under § 121.1 in the cement kilns proposed rulemaking was removed, and the existing definition of the term "CEMS" under § 145.142 that applies to cement kilns has been retained in the final-form rulemaking.

The final-form amendments add definitions for the following new terms to § 145.142 to support the substantive provisions under §§ 145.141 – 145.146 (relating to emissions of NO_x from cement manufacturing): "calcine," "long dry-process cement kiln," "long wet-process cement kiln," "precalciner cement kiln," "preheater cement kiln" and "system-wide."

No substantive changes were made to the definitions of the terms between proposed and final rulemaking.

A definition for a new term, “system-wide,” was added between proposed and final rulemaking.

The following regulatory language relating to standard requirements under paragraphs 145.143(b)(1) and (2) was published at proposed rulemaking under subsections 129.402(a) and (b). This final-form rulemaking moves the substantive language from subsections 129.402(a) and (b) to 145.143(b)(1) and (2).

The final-form subsection 145.143(b) now provides that the owner or operator of a Portland cement kiln may not operate that kiln in a manner that results in NO_x emissions in excess of its allowable emissions. Paragraph 145.143(b)(2) requires that the owner or operator of a Portland cement kiln determine allowable emissions of NO_x by multiplying the tons of clinker produced by the Portland cement kiln for the period from May 1 through September 30, 2011, and for each year thereafter by: 3.88 pounds of NO_x per ton of clinker produced for long wet-process cement kilns; 3.44 pounds of NO_x per ton of clinker produced for long dry-process cement kilns; and 2.36 pounds per ton of clinker produced for preheater cement kilns and for precalciner cement kilns.

Minor clarifying changes are made under subsection 145.143(c).

The following regulatory language relating to standard requirements in subsection 145.143(d) was published at proposed rulemaking under paragraph 129.404(c)(1). This final-form rulemaking retains unchanged the substantive language under subsection 145.143(d).

The final-form subsection 145.143(d) is unchanged and provides that the owner or operator of a Portland cement kiln subject to this section shall surrender to the Department one CAIR NO_x allowance and one CAIR NO_x Ozone Season allowance, as defined in 40 CFR 96.102 and 96.302 (relating to definitions), for each ton of NO_x by which the combined actual emissions exceed the allowable emissions of the Portland cement kilns subject to this section at a facility from May 1 through September 30.

The following regulatory language relating to compliance determination in § 145.144 was published at proposed rulemaking as § 129.403. This final-form rulemaking moves the regulatory language from § 129.403 to § 145.144.

The final-form § 145.144 requires, among other things, that not later than April 15, 2011, the owner or operator of a Portland cement kiln shall install, operate and maintain CEMS for NO_x emissions, and report CEMS emissions data to the Department in accordance with the CEMS requirements of Chapter 139, Subchapter C.

The Board has modified the compliance date under this section between proposed and final rulemaking. The new compliance date under this section is now 2011, and not 2009, as proposed. CEMS must be installed, operated, and maintained by April 15, 2011, rather than May 1, 2009, as originally proposed. This change was made to ensure that the CEMS is operational before the compliance date of May 1, 2011, which is the first day of the first compliance period

for affected owners and operators for the determination of allowable emissions for the Portland cement kilns using the new emission limits specified under paragraph 145.143(b)(2). In addition, the Board has changed certain data substitution requirements under subsection (b). For example, subsection (b) now provides that data invalidated shall be substituted either by the highest valid 1-hour emission value that occurred under similar source operating conditions during the reporting quarter for an invalid data period during that quarter or an alternative method of data substitution as approved by the Department in writing.

Additionally under this section, the owner or operator of a Portland cement kiln subject to this section shall submit to the Department quarterly reports of CEMS monitoring data in pounds of NO_x emitted per hour, in a format approved by the Department, which is in compliance with Chapter 139, Subchapter C. Also the CEMS for NO_x installed under the requirements of this section must meet the minimum data availability requirements in Chapter 139, Subchapter C.

The following regulatory language relating to compliance demonstration and reporting requirements in § 145.145 was published at proposed rulemaking as § 129.404. This final-form rulemaking moves the regulatory language from § 129.404 and places it under § 145.145.

Final-form § 145.145 provides, among other things, that by October 31, 2011, and each year thereafter, the owner or operator of a Portland cement kiln shall report certain information in writing to the Department, in a format approved by the Department. The owner or operator of a Portland cement kiln or multiple Portland cement kilns shall demonstrate compliance with the emission requirements specified in § 145.143 on either a kiln-by-kiln basis, a facility-wide basis or a system-wide basis among Portland cement kilns under the common control of the same owner or operator in this Commonwealth.

The Board has decided to delete the averaging provision for new cement kilns under proposed § 129.404(d), which would have been placed under § 145.145. Under § 127.1 (relating to purpose), new cement kilns, like all new sources, are required to control emissions to the maximum extent, consistent with BAT as determined by the Department at the date of issuance of the plan approval for the new source. The term “best available technology” is defined under § 121.1 as equipment, devices, methods or techniques as determined by the Department which will prevent, reduce or control emissions of air contaminants to the maximum degree possible and which are available or may be made available. To allow new sources to average with existing sources to meet the regulatory obligations of the existing sources would be inconsistent with the intent of the BAT regulatory obligation of the new sources, which is to control emissions to the maximum degree possible. Consequently, the Board believes that the proposed averaging section is inconsistent with existing regulatory obligations, and this provision has been deleted from the final rule.

The Board has modified the compliance date under this section between proposed and final rulemaking. The new compliance date under this section is now October 31, 2011, and not October 31, 2009, as proposed.

The following regulatory language relating to recordkeeping in § 145.146 (relating to recordkeeping) was published at proposed rulemaking as § 129.405. This final-form rulemaking moves the regulatory language from § 129.405 to § 145.146.

The final-form § 145.146 provides that the owner or operator of a Portland cement kiln shall maintain an operating log for each Portland cement kiln that includes certain monthly information, and maintain records of certain other information. The records required under this section must be maintained for five years, be kept onsite, and be made available to the Department upon request.

G. Benefits, Costs and Compliance

Benefits

Overall, the citizens of this Commonwealth will benefit from these proposed amendments because the amendments will result in improved air quality by reducing ozone precursor emissions and will encourage new technologies and practices, which will reduce emissions.

The reductions in NO_x emissions from Portland cement kilns will also help protect the public health and welfare from high levels of fine particulate matter (PM_{2.5}) pollution and the formation of regional haze, of which NO_x is a precursor component. Reductions in NO_x emissions also reduces visibility impairment, soiling and materials damage, and acid deposition.

Compliance Costs

The final-form regulation will include emissions averaging and use of CAIR NO_x Ozone Season Trading Program Allowances and CAIR NO_x Annual Trading Program Allowances as near term compliance options. This will allow an owner or operator of an affected cement kiln to elect the least-cost compliance alternative, including emissions averaging or the use of CAIR NO_x allowances, to demonstrate compliance with the NO_x emission limits. Based on 2005 ozone season emissions, implementation of the final-form rule is estimated to result in a reduction of 1,300 tons of NO_x. Based on a 2009 average CAIR NO_x Ozone Season Trading Program and CAIR NO_x Annual Trading Program allowance price of \$500, the cost of 1,300 NO_x allowances would be \$650,000 per year.

Compliance Assistance Plan

The Department plans to educate and assist the public and regulated community in understanding the newly revised requirements and how to comply with them. This will be accomplished through the Department's ongoing compliance assistance program.

Paperwork Requirements

The final-form regulations will not significantly increase the paperwork that is already generated during the normal course of business operations.

H. Pollution Prevention

The Federal Pollution Prevention Act of 1990 established a National policy that promotes pollution prevention as the preferred means for achieving state environmental protection goals. The Department encourages pollution prevention, which is the reduction or elimination of

pollution at its source, through the substitution of environmentally friendly materials, more efficient use of raw materials, and the incorporation of energy efficiency strategies. Pollution prevention practices can provide greater environmental protection with greater efficiency because they can result in significant cost savings to facilities that permanently achieve or move beyond compliance. This final-form rulemaking will provide the owners and operators of all cement kilns in this Commonwealth the opportunity to improve the energy efficiency at their operations, which will result in lower NOx emissions.

I. Sunset Review

This regulation will be reviewed in accordance with the sunset review schedule published by the Department to determine whether the regulation effectively fulfills the goals for which it was intended.

J. Regulatory Review

Under section 5(a) of the Regulatory Review Act (71 P. S. § 745.5(a)), on April 7, 2008, the Department submitted a copy of the notice of proposed rulemaking, published at 38 *Pa.B.* 1838, to the Independent Regulatory Review Commission (IRRC) and to the Chairpersons of the House and Senate Environmental Resources and Energy Committees for review and comment.

Under section 5(c) of the Regulatory Review Act, IRRC and the Committees were provided with copies of the comments received during the public comment period, as well as other documents when requested. In preparing the final-form regulations, the Department has considered all comments from IRRC, the Committees and the public.

Under section 5.1(j.2) of the Regulatory Review Act, on xxxx, these final-form regulations were deemed approved by the House and Senate Committees. Under section 5.1(e) of the Regulatory Review Act, IRRC met on xxxx and approved the final-form regulations.

K. Findings of the Board

The Board finds that:

- (1) Public notice of proposed rulemaking was given under sections 201 and 202 of the act of July 31, 1968 (P.L. 769, No. 240) (45 P.S. §§1201 and 1202) and regulations promulgated thereunder at *1 Pennsylvania Code* §§7.1 and 7.2.
- (2) At least a 60-day public comment period was provided as required by law, and all comments were considered.
- (3) These regulations do not enlarge the purpose of the proposal published at 38 *Pa.B.* 1838 (April 19, 2008).
- (4) These regulations are necessary and appropriate for administration and enforcement of the authorizing acts identified in Section C of this order.

- (5) These regulations are reasonably necessary to attain and maintain the ozone and PM2.5 National Ambient Air Quality Standards (NAAQS).

L. Order of the Board

The Board, acting under the authorizing statutes, orders that:

- (a) The regulations of the Department of Environmental Protection, *25 Pennsylvania Code*, Chapter 145 is amended by amending §§ 145.141-145.146 to read as set forth in Annex A.
- (b) The Chairperson of the Board shall submit this order and Annex A to the Office of General Counsel and the Office of Attorney General for review and approval as to legality and form, as required by law.
- (c) The Chairperson of the Board shall submit this order and Annex A to the Independent Regulatory Review Commission and the Senate and House Environmental Resources and Energy Committees as required by the Regulatory Review Act.
- (d) The Chairperson of the Board shall certify this order and Annex A and deposit them with the Legislative Reference Bureau, as required by law.
- (e) These final-form amendments will be submitted to the U.S. EPA as an amendment to the Pennsylvania State Implementation Plan.
- (f) This order shall take effect immediately upon publication in the *Pennsylvania Bulletin*.

BY:

JOHN HANGER
Chairman
Environmental Quality Board